- - - Index to CONTENTS, May, 1935 - - -

Back numbers of The American City may be ordered from the publishers

Airports and Landing Fields
Status of Airports and Landing Fields.... 13
Snow Tunnels on Airways 13

Cartoons
The Hazard of Driving and Walking..... 99

City Manager Plan
Recent City Manager Appointments..... 105

Conferences, Conventions and Exhibits
Compact Exhibit of Housing Available.... 86
North Central States Tax Officials' Conference Formed 111
Conventions—When and Where..... 123
Municipal Signal Superintendents to Hold Convention 129

Elections
Wheeling Adopts Proportional Representation 86

Finance and Taxation
Freak in "City Sharing"..... 13
Annual Rental vs. Sales Value as a Basis for Real Estate Taxation..... 76
Financing Local Improvements by Revenue Bonds 79
How Ninety-Four Cities Spend Their Income 109
The Municipal Bond Market..... 109
North Central States Tax Officials' Conference Formed..... 111
Tax Data Tabulation as a Work-Relief Project 111
Improving Your City's Revenue Structure. 113

Fire Prevention and Control
But Why Not Standard Fire Apparatus!... 7
Municipal Hose..... 7
Least Fire Waste..... 15
Fire Apparatus in Siam..... 15
New "All-Purpose" Fire Truck..... 15

Forward Steps
Items Contributed by Officials..... 84

Fountains
Color Music 7, 131

Government and Administration
Triple Partnership: Key West's Experiment 111
What's Ahead for the City?..... 113

Health
Two National Health Conservation Contests 70

Housing
PWA Slum Clearance Makes Halting Progress 68
Eminent Domain for Clearing Slums and Building Low-Cost Housing Upheld..... 82
Compact Exhibit of Housing Available.... 86

Improving Municipal Administration
Items from Public Administration Clearing House 111

Legal Decisions
The City's Legal Rights and Duties..... 117

Liquor Control
The Return of the Saloon..... 87

Motor Equipment
But Why Not Standard Fire Apparatus!... 7
New "All-Purpose" Fire Truck..... 15
A New Motor Grader..... 127

News and Illustrations
Hints for Officials..... 125

Outdoor Lighting
Outstanding Lighting Puts Pompton Lakes on the Map..... 7
"Color Music" for Public Parks..... 131
Specially Designed Lighting Units..... 133

Parks and Recreation
Color Music 7, 131
Natural Resources Used to Make an Attractive Recreation Center..... 85
What County Parks Should Be..... 103
An Exceptional Opportunity to Enlarge Public Recreation Areas..... 107

Planning and Zoning
Preparing Plans and Inducing Action..... 78
The Civic Center in Swansea, Wales..... 84
Triangular Highway Structure Urged for Nation Plan 105
Zoning and Planning Notes..... 115

Police
Many Cities File Voluntary Fingerprints.. 15
Police and Strikes..... 111

Power Plants
Municipal Plants Can Compete—They Are Doing It 69
Electric House Meters Placed in Groups on Poles Outdoors 84

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Subscribed to and sworn before me this 10th day of April, 1935.
Edwin Wagner, Notary.

Publications
New Books and Pamphlets..... 119

Pub'ic Works
Financing Local Improvements by Revenue Bonds 79
Public Works—Raking Leaves?..... 83
Public Works Engineers—As Inquirers and Reporters 113

Public Works Administration
How the $4,880,000,000 Is to Be Spent.... 5
How the Work Will Be Directed..... 5
PWA Slum Clearance Makes Halting Progress 68
Types of Local Projects Receiving PWA Aid 107
White House Announces Work-Relief Set-up 109

Radio
Antennas Are Important.....7, 67

Sewers and Sewage Disposal
Sewage Works Problems..... 11
Sewage and Industrial Waste Problems.... 73
Sludge Digestion and Utilization of Gas.. 78

Streets and Highways
The St. Louis Municipal Asphalt Plant.... 13
Double Sealing 13
Installation of a Large Equalizing Culvert 77
Producing Non-Skid Asphalt Surfaces.... 80
Joint Study of the Effect of De-Airing on Properties of Vitrified Paving Brick..... 125
A New Motor Grader..... 127
Grader Used to Improve a Large Parking Space 129

Traffic and Transportation
Winchester, England, Builds a Bus Terminal 66
The Hazard of Driving and Walking..... 99
That Troublesome Matter of Parking..... 101
The London Silence..... 101
Markers That Mean What They Say..... 129

Unemployment Relief
How the $4,880,000,000 Is to Be Spent.... 5
How the Work Will Be Directed..... 5
White House Announces Work-Relief Set-up 109

Waste Disposal
Old Tin Cans..... 7
A Combined Wastes Disposal Plant..... 72

Water Supply and Water Works
Fighting the Drought..... 9
Three New Water Tanks, Kansas City, Kans. 9
What Is Hard Water?..... 9
When to Make Adjustments..... 9
Water Planning Committee..... 9
The Logic of Universal Metering 63
An Automatic Softening Plant for Utica's Water Suply 65
Preserving the Artesian Water Supply of Honolulu 71
Industrial Waste Problem Resulting from Population Concentration 73
Iron and Manganese Removal, Lincoln, Nebr. 75
The New 25,000,000-Gallon Steam Turbine Centrifugal Pump on the Eastern Hills Service, Cincinnati 79
"Wild Animals I Have Met"..... 83
Rates, Service and Installation Charges, Hydrant Rentals, Sprinkler Costs—XIII. 89
Modernizing the Water System at Fort Thomas, Ky. 125
Portable Testing Water Meter..... 125
New England City Installs Water-Works Valves 127

See pages 17, 18, 20, 119, 121 for notices of catalogs and publications on municipal and civic subjects

For Index to Advertisements see page 142

in NEW YORK

THE WORLD'S LARGEST IS PITTSBURGH-METERED

Everyone has heard of Empire State. Towering 1,250 feet above Fifth Avenue at 34th Street, it is its own greatest advertisement. Of the ninety-seven buildings in New York City that are thirty-six stories or more in height, Empire State is building No. 1 in height and size. In fact, it is the largest office building in the world.

When meters were purchased for the Empire State Building, Pittsburghs were selected to measure the 625,000 gallons of water used per day. Pittsburgh meters are also installed in many other New York skyscrapers such as Farmers Loan & Trust Company, National City Bank, Radio City, Salmon Tower, Gillette Building and the New York Telephone Company. Dependability in measuring accurately the tremendous volumes of water consumed daily, and their reputation for long life prove their efficiency and superiority.

PITTSBURGH EQUITABLE METER CO.

MERCO NORDSTROM VALVE CO.

MAIN OFFICES PITTSBURGH, PA.

New York Columbia Chicago Memphis Kansas City Philadelphia Tulsa Houston Los Angeles Oakland

How the $4,880,000,000 Is to Be Spent

WITH President Roosevelt's signature on April 8, the "Emergency Relief Appropriation Act of 1935" became a law. "In order to provide relief, work relief and to increase employment by providing for useful projects" (to quote from the text of the Act), there is made available, for expenditure prior to June 30, 1937, a new appropriation of $4,000,000,000 and $880,000,000 from unexpended balances of previous appropriations. The eight main classifications of projects for which sums not to exceed those specified are allocated in the Act are:

(a) Highways, roads, streets and grade-crossing elimination, $800,000,000.

(b) Rural rehabilitation and relief in stricken agricultural areas, and water conservation, transmountain water diversion and irrigation and reclamation, $500,000,000.

(c) Rural electrification, $100,000,000.

(d) Housing, $450,000,000.

(e) Assistance for educational, professional, and clerical persons, $300,000,000.

(f) Civilian Conservation Corps, $600,000,000

(g) Loans or grants, or both, for projects of states, territories, possessions, including subdivisions and agencies thereof, municipalities and the District of Columbia, and self-liquidating projects of public bodies thereof, where, in the determination of the President, not less than twenty-five per centum of the loan or the grant, or the aggregate thereof, is to be expended for work under each particular project, $900,000,000.

(h) Sanitation, prevention of soil erosion, prevention of stream pollution, sea-coast erosion, reforestation, forestation, flood control, rivers and harbors and miscellaneous projects, $350,000,000.

It is stipulated that "not to exceed 20 per centum of the amount herein appropriated may be used by the President to increase any one or more of the foregoing limitations if he finds it necessary to do so in order to effectuate the purpose of this joint resolution."

Among the provisions of the Act—Joint Resolution H.J. 117 as amended—of special interest to readers of THE AMERICAN CITY are:

Under Section 5, the President is authorized "to acquire, by purchase or by the power of eminent domain, any real property or any interest therein, and improve, develop, grant, sell, lease (with or without the privilege of purchasing), or otherwise dispose of any such property or interest therein."

Rates of Pay

Section 7 stipulates that: "The President shall require to be paid such rates of pay for all persons engaged upon any project financed in whole or in part, through loans or otherwise, by funds appropriated by this joint resolution, as will in the discretion of the President accomplish the purposes of this joint resolution, and not affect adversely or otherwise tend to decrease the going rates of wages paid for work of a similar nature. The President may fix different rates of wages for various types of work on any project, which rates need not be uniform throughout the United States."

Section 8 requires that: "Wherever practicable in the carrying out of the provisions of this joint resolution, full advantage shall be taken of the facilities of private enterprise."

The New Highway Legislation

In an analysis of the highway features of the Emergency Relief Appropriation Act of 1935, issued by the American Road Builders' Association, it is pointed out that the new legislation:

Continues the apportionment of the highway funds to the states in accordance with the Hayden-Cartwright Act.

Apportions the grade-crossing elimination funds in proportion to mileage of highways, mileage of railroads and population.

Provides for the expenditures of these funds by state highway departments under the Federal Highway Act of November 9, 1921, as amended, and the Hayden-Cartwright Act of June 18, 1934.

Provides that no part of the funds need be matched by the states.

Provides that the funds shall be spent under Rules and Regulations prescribed by the President. (These undoubtedly will be similar to the Rules and Regulations under the Hayden-Cartwright Act.)

Provides that preference in employment of labor shall be given to persons receiving relief, excepting those in executive, administrative, supervisory and highly skilled positions.

Authorizes the President to predetermine for each state the hours of work and the rates of wages to be paid skilled, intermediate and unskilled labor.

Provides that whenever practicable full advantage shall be taken of the facilities of private enterprise (contract system).

Continues the penalty clause for states diverting motor-vehicle and gasoline taxes.

How the Work Will Be Directed

PRESIDENT ROOSEVELT, in his radio talk of April 28, outlined the agencies to be responsible for directing the spending of the $4,880,000,000 as follows:

1. I have set up a Division of Application and Information, to which all proposals for the expenditure of money must go for preliminary study and consideration.*

2. After the Division of Application and Information has sifted these projects, they will be sent to an Allotment Division composed of representatives of the more important governmental agencies charged with carrying on work-relief projects. The group will also include representatives of cities, and of labor, farming, banking and industry.

This Allotment Division will consider all of the recommendations submitted to it, and such projects as they approve will be next submitted to the President, who, under the act, is required to make final allocations.

3. The next step will be to notify the proper government agency in whose field the project falls, and also another agency which I am creating —a Progress Division. This Division will have the duty of coordinating the purchase of materials and supplies and of making certain that people who are employed will be taken from the relief rolls. It will also have the responsibility of determining work payments in various localities, of making full use of existing employment services and of assisting people engaged in work relief to move as rapidly as possible back into private employment when such employment is available. Moreover, this Division will be charged with keeping projects moving on schedule.

Personnel of the Allotment Division

The following, subject to later additions, will constitute the membership of the Works Allotment Division:

Harold L. Ickes, Secretary of the Interior (Chairman)
Henry A. Wallace, Secretary of Agriculture
Frances Perkins, Secretary of Labor
Frank C. Walker, Director of the National Emergency Council
The Director of the Progress Division
Admiral Christian Peoples, Director of Procurement
Daniel W. Bell, Director of the Bureau of the Budget
Major General Edward M. Markham, Chief of Engineers, U.S.A.
Elwood Mead, Commissioner of Reclamation
H. H. Bennett, Director of Soil Erosion
F. A. Silcox, Chief of the Forest Service
Robert Fechner, Director of Emergency Conservation Work
Thomas H. MacDonald, Chief of the Bureau of Public Roads
Rexford G. Tugwell, Director of Rural Settlement
The Director of Rural Electrification
The Chief of the Division of Grade Crossing Elimination
The Director of Relief
Colonel Horatio B. Hackett, Chief of the Urban Housing Division
A representative of the Business Advisory Council
A representative of organized labor
A representative of farm organizations
A representative of the American Bankers Association
A representative of the Mayors Conference

Types of Projects to Be Favored

The President has announced that he will recognize six fundamental principles:

(1) The projects should be useful.

(2) Projects shall be of a nature that a considerable proportion of the money spent will go into wages for labor.

(3) Projects which promise ultimate return to the Federal Treasury of a considerable proportion of the costs will be sought.

(4) Funds allotted for each project should be actually and promptly spent and not held over until later years.

(5) In all cases projects must be of a character to give employment to those on the relief rolls.

(6) Projects will be allocated to localities or relief areas in relation to the number of workers on relief rolls in those areas.

---

* See page 109 of this issue.

60 Year Fight For Water Is Won By Layne

Belleville, Kansas, Now Provided With Ample Supply

In Belleville, Kansas, the folks used to say that the little group of pioneers who founded the town in 1869, picked out the highest and dryest site they could find.

And—as far as water was concerned, they added—Belleville kept on being just about the dryest spot in the state for nearly 60 years.

Belleville's water troubles began almost as soon as the town was founded. Two or three small privately owned wells yielded a precarious supply that fluctuated greatly, and more often than not housewives had to melt snow to obtain a few precious gallons. When there was no snow, they paid 10 cents per barrel for water that had to be hauled to them on ground sleds.

The first municipal supply was a large diameter well, 35 feet deep that failed so often officials sought refuge in two more wells sunk near a small pond.

Water Contained Typhoid

But the drought of 1890 struck and the town was forced to fall back on the muddy waters of the pond. The fact that the pond water often carried small fish into bathtubs might have been humorous, had not water for drinking purposes and drawn from the same source, carried typhoid.

Belleville's water supply went from bad to worse until at last even horses and cattle refused to drink it.

Finally the Layne-Western Company, of Kansas City, Missouri, was commissioned to locate an adequate water supply. Layne-Western engineers drilled many test wells before they found the proper location.

At last, ten miles north of town, they located water-bearing gravel from which, tests showed them, they could draw an inexhaustible supply.

Supply Unlimited

To Belleville, they guaranteed from two Layne gravel wall wells, at least 1,000 gallons of water per minute. Then they went to work and made good their guarantee. The two wells produced more than 1,000 gallons per minute, and municipal engineers declared that the wells were capable of producing 4,000 gallons per minute.

Belleville today draws a supply of nearly 300,000 gallons per day from its Layne system, and an unlimited supply is available for future needs.

The story of Belleville is another in the series of stories of jobs that "couldn't be done," filed away as "successfully completed" in the records of the world's largest and oldest water developing organization, which maintains offices throughout the United States and in many foreign countries.

Speed enough for 1898

And speed enough, possibly, for 1935.

But, modern rail transportation demands more than speed. It demands speed plus efficiency, because loads must be moved economically as well as swiftly.

That same rule holds true for water supply systems which serve today's industries and municipalities.

If the system that serves your plant or your city is old or out of date, it may produce enough water, but how much does that production cost?

Why not find out how modern Layne Pumps and Wells can cut your water costs, just as they have for thousands of industries and municipalities all over the world?

Often Layne Well Water Systems actually pay for themselves in reduced production costs.

Submit your water supply and deep well pumping problems to the world's largest and oldest water developing organization. They will be glad to discuss them with you without obligation.

For your convenience, there is a Layne representative near you. The coupon will put you in touch with the nearest Layne office.

THINK:
OBSOLETE EQUIPMENT COSTS 30% MORE TO OPERATE

LAYNE PUMPS
AND WELL WATER SYSTEMS

LAYNE & BOWLER, Incorporated.
Department B, General Offices, Memphis, Tennessee.

Without obligation to me, I would like to discuss my ☐ water supply, ☐ deep well pumping problem with your representative. Please have him communicate with me.

Name _____

Address _____

Our Municipal Notebook

Antennas Are Important

POLICE radio is not in my field, says the Mayor. Maybe not, but the economical handling of city funds is, and the smooth operation of the police force is. True, says the Mayor; but certainly the detail of putting the antenna in the right place can be left to the Chief. But the Chief leaves that technical detail to the manufacturer, and the manufacturer is concerned with making a difficult sale. If the police chief, or the purchasing agent, is too economically minded, the antenna may be placed where it will cost least to install, and cause the entire radio system to function poorly. Or it may be installed in the most expensive way, yet prove unsatisfactory. "It is a good thing to remember," says J. G. Beard, of the Westinghouse police radio division, "that the higher up you locate the antenna, the better general coverage you will get. The antenna is as important to the transmitter as the men themselves are to the force." For a state or county radio system, the antenna should be located out in the country, preferably near a main highway traveled by taxpayers who will then see what some of their money has provided, with telephone and power lines near the site. Elsewhere in this issue there is a short article that tells how a good antenna makes a good transmitter better, and makes possible a smaller transmitter and a lower annual cost for tubes and power, and vice versa.

Color Music

AS a form of public entertainment, "color music" has not become common. Attempts have been made to synchronize colors and symphonic music; the chief obstacle being that nobody really knows which color actually corresponds to which note, if indeed there is any correspondence. The objective at this stage of the development of what may become a new art, is a cycle of harmonious colors that blend pleasantly, with or without music. Color floodlighting of fountains, waterfalls, lagoons, park scenery and even public buildings is extremely effective and not too expensive. Indeed, last summer 19,000 persons paid 50 cents each to see the outstanding illumination display on the Pierre du Pont estate near Wilmington. R. B. Hunter, Research Engineer of Cutler-Hammer, makers of the apparatus, believes that "a properly organized display" would pay its cost in every city of 50,000 population. Here is possible opportunity for a public service of an unusual character—not for the unemployed, the destitute, the defective, but for the entire city, its friends, guests and neighbors, and at a nominal charge that supports the exhibition. This looks like something worth investigating. Infinite combinations of colors are possible.

But Why NOT Standard Fire Apparatus!

THOSE who know most about what fire apparatus ought to be would do well to get together and draw up basic specifications covering each type, as experts in other industries do regarding the machinery that these industries use. Practically all industries except that of fire-fighting are compelled to do this for financial reasons. A building contractor who insisted on having his concrete mixers and steam shovels made to order would be unable to get any contracts, because of the high fixed charges for equipment that he would have to include in his overhead. Yet erecting a building calls for as much skill as keeping it from burning down. When the Telephone Co., the Standard Oil Co., General Baking Co., or Marshall Field, require a new fleet of trucks, they select stock models and express their personalities in paint. But when a town needs a fire truck it too often appears to feel that here is an utterly unique situation that can be met only in the most expensive manner. Instead of ordering a manufacturer's standard 750-gallon pumping engine, it orders an original work of art with special equipment that is not essential. It pays accordingly and gathers the impression that factory-built fire apparatus is a luxury. As a matter of fact, it could have purchased a piece of apparatus of stock design that would have served equally well and cost considerably less. What is needed in fire equipment is dependability and capacity, not doodads. Getting to the fire pronto with enough hose, water and pressure, or with ladders that are long enough and fast enough, are the requirements the world over. As a beginning, it would be well for fire departments to adopt a sensible standard for booster tank capacity, hose body capacity, ladder footage required, and many other items necessitating changes in construction, for which all purchasers are bound to pay. Half the apparatus sold is special in design and construction.

Municipal Hose

MAYOR LaGUARDIA introduced into the State Assembly in March a bill to permit New York City to manufacture its own hose. It was killed by a viva voce vote. Some may ask why a city should not make its own hose or motor vehicles or traffic equipment, just as it makes its own power? The answer is the need for the continual improvement of the product, which the private companies can afford because of the many markets for their products in addition to the municipal market. The fire hose of today is not that of ten years ago. Not only does the machinery for making it undergo continual improvement; but the methods of producing the materials of which it is composed also are evolving. The entire process involves the industries of agriculture, mining, textiles, chemistry, mechanical testing, and foreign relations. There are many strictly municipal services yet to be perfected before the municipality sets out to be a hose manufacturer.

Outstanding Lighting Puts Pompton Lakes on the Map

THE local newspaper of Pompton Lakes, N. J., expresses satisfaction at the fine reports that have been printed in THE AMERICAN CITY and other publications about the remarkable installation of sodium-vapor lamps which the town sponsored. Says the *Bulletin*:

> Such advertising is of inestimable value for any town. In addition to the wide publicity given, the fame of the community is spread through the fact that many delegations have already inspected the lights and inquiries regarding them have come from Seattle, Wash., and Atlanta, Ga., and other distant cities. It is to be hoped that the illumination can be continued for years, as it means the very finest that science has produced and lets the world know that here is a progressive and forward-looking municipality.

This installation at Pompton Lakes is undoubtedly worth its weight of golden light to the community. Not every town, of course, can have at its threshold an exhibition demonstration of sodium highway-lighting; but some city is going to be the first to make a complete installation of mercury-vapor lamps in conjunction with a complete county-state installation of sodium-vapor lamps on all roads and highways to the city limits.

Old Tin Cans

HAVE old tin cans collected by the garbage man a commercial value? A prominent detinning concern advises that there is no market for tin cans unless there happens to be a sashweight factory in the vicinity. During the war, when steel companies were not too particular, they bought detinned cans, which are merely so much iron. But a can has a soldered seam from which it is difficult to remove all the tin, and it all must be removed to make it perfectly fit for steel making. But tin cans melt down into beautiful sashweights.

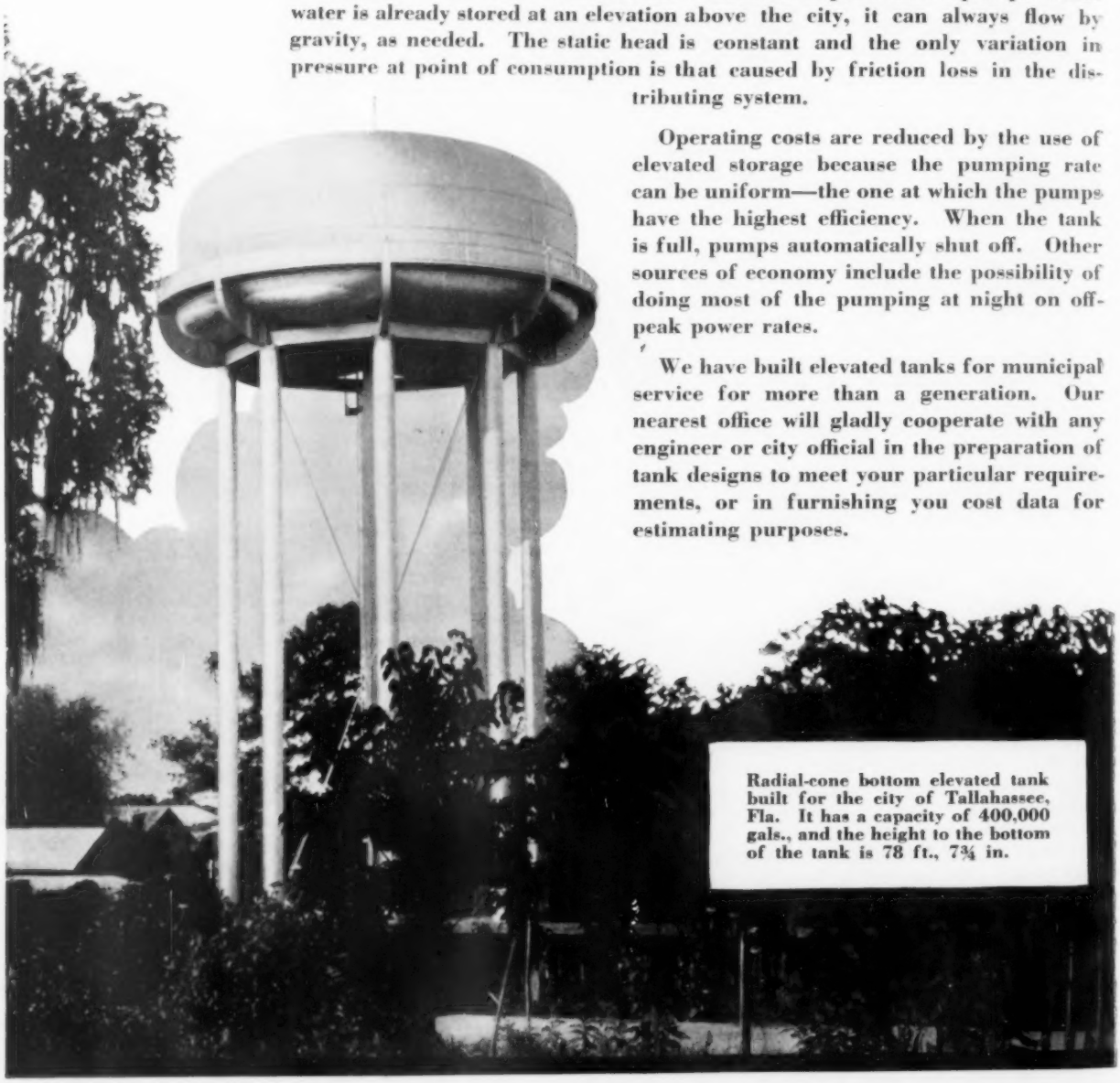
To Improve Pressure and Cut Operating Costs

These two results almost inevitably follow the installation of adequate elevated storage in a water supply system.

Pressure is more uniform because it does not depend on the pumps. Since water is already stored at an elevation above the city, it can always flow by gravity, as needed. The static head is constant and the only variation in pressure at point of consumption is that caused by friction loss in the distributing system.

Operating costs are reduced by the use of elevated storage because the pumping rate can be uniform—the one at which the pumps have the highest efficiency. When the tank is full, pumps automatically shut off. Other sources of economy include the possibility of doing most of the pumping at night on off-peak power rates.

We have built elevated tanks for municipal service for more than a generation. Our nearest office will gladly cooperate with any engineer or city official in the preparation of tank designs to meet your particular requirements, or in furnishing you cost data for estimating purposes.



Radial-cone bottom elevated tank built for the city of Tallahassee, Fla. It has a capacity of 400,000 gals., and the height to the bottom of the tank is 78 ft., 7¾ in.

CHICAGO BRIDGE & IRON WORKS

Chicago.....2127 Old Colony Bldg.
New York.....3308-165 Broadway Bldg.
Cleveland.....2236 Rockefeller Bldg.
Detroit.....1501 Lafayette Bldg.
Philadelphia....1616 "1700" Walnut St. Bldg.
Boston.....1501 Consolidated Gas Bldg.
Birmingham.....1502 N. Fiftieth St.
Dallas.....1406 Dallas Athletic Club Bldg.
San Francisco.....1033 Rialto Bldg.
Houston.....2919 Main Street
Tulsa.....1625 Thompson Bldg.
Los Angeles.....1403 Wm. Fox Bldg.

PLANTS IN CHICAGO, BIRMINGHAM AND GREENVILLE, PA.

Water Supply and Purification

Fighting the Drought

A COMBINATION of circumstances at Fort Smith, Ark., brought about a rather interesting conservation and protection project for the water supply. The water plant draws water from the Poteau River through a brick intake. The river flows into the Arkansas River about a mile and a half below the intake and has a low-water slope of about 6 inches in 10 miles.

In the summer the Arkansas River has a high salt content and it backs up into the Poteau River, surrounding the intake with a water the salt content of which approximated 1,200 ppm for about 120 days last summer. The Poteau River at the intake is about 290 feet wide at low water.

In July, 1934, sacks of earth and sand were used to build a dam extending across the river to hold out the salt water, on the theory that the springs would replenish the Poteau with a flow great enough to extend through the drought period. The salt content was steadily reduced in the Poteau pool by this method. On August 23, 1934, the difference in elevation of water, about 5½ feet, threw too much of a strain on the dam, and it gave way, permitting the Arkansas River salty water to back up into the Poteau for 15 miles. The fall rains started about September 1 and brought relief.

W. H. VAUGHN,
Commissioner of Water Works, Fort Smith, Ark.

Three New Water Tanks

DURING the past year the Board of Public Utilities of Kansas City, Kans., has installed three new elevated water tanks in the distribution system, bringing the total amount of elevated storage up to 850,000 gallons. The three new tanks have increased the water pressures in their respective districts from 5 to 10 pounds. The estimated saving in pumping costs for the whole system as constituted, compared with the cost of direct and continuous pumping, is about $10,000 per year.

Although elevated storage results in reduced pumping costs, this is not the only determining factor in the installation of these tanks in Kansas City. The contour of the city is exceedingly rough and, to avoid carrying excessive pressure in the entire distribution system, five booster districts were established. Each is in a high section of the city.

The three new installations include a 250,000-gallon tank in the Argentine district, a 150,000-gallon tank in the Rosedale district, and a 150,000-gallon tank in the Grandview district, all furnished by the Chicago Bridge & Iron Works. Two 150,000-gallon elevated tanks were already in service in the Quindaro and Chelsea districts.

The booster pumps in each district are controlled automatically by the pressure in the district and operate intermittently. They are set to start when approximately 30 per cent of the water in the tank has been used, and to stop when the tank has been refilled.

R. J. DUVALL,
Assistant Manager of Production and Distribution, Board of Public Utilities.

What Is Hard Water?

THE consumer judges water to be hard if much soap is required to produce a lather, and soft if it lathers freely. The hardness of most water supplies is due to four compounds which are held in solution. These compounds are:

1. Calcium bicarbonate (solution of limestone, $CaCO_3$ in waters containing carbon dioxide, CO_2).
2. Magnesium bicarbonate (solution of magnesite, $MgCO_3$ in water containing carbon dioxide, CO_2).
3. Calcium sulphate (in the form $CaSO_4 .2H_2O$ is known as gypsum.)
4. Magnesium sulphate (in the form $MgSO_4 .7H_2O$ is known as epsom salts).

As long as any of these compounds or a combination of them are present in a water supply, it is hard.

Chlorides and nitrates of calcium and magnesium are sometimes present.

Calcium and magnesium bicarbonates were formerly designated as *temporary hardness*, but are now termed *carbonate hardness*. Calcium and magnesium sulphates, chlorides, and nitrates were formerly designated as *permanent hardness* or incrustants, but are now usually called *non-carbonate hardness*.

Iron and aluminum compounds cause hardness, but they are usually present in such small quantities that it is customary not to consider them in connection with hardness. The presence of iron, however, is very objectionable. It stains everything with which it comes in contact. The stain is noticed particularly in washbowls, bathtubs, sinks, and lavatories. It is especially objectionable if the water is used for laundry purposes. Water-softening processes remove iron as well as hardness salts.

—Printed by permission from "Water Supply and Treatment," by CHARLES P. HOOVER, Water Softening and Purification Works, Columbus, Ohio, published as copyrighted Bulletin 211 by the National Lime Association, Washington, D. C.

When to Make Adjustments and When Not to

THE efficiency of metering a water system is lost if the department makes adjustments; with the possible exception, however, that if the department makes it a practice to meter the service at the curb, an adjustment will be necessary. The department can hardly hold a property owner responsible for leakage underground between the curb and the house, because the householder does not know anything about the water business. If the meter is placed in the cellar, the department is up against it if adjustments are made.

According to R. G. Yaxley, of the Waterford, N. Y., Water Department, it is best for the superintendent to make a personal examination of all leaks. If a bill is high, he sends the meter reader back to check it up. If by chance the meter were reversed, giving a low bill, the meter reader is sent back just the same as if there were a high bill. There was a case in Waterford where a man and wife were both in business and were at home only at night. Their bill totaled $45 or $50 for five years and they had no minimum charge. Then this consumer had a bill of $50 for one quarter. There was a service line between the house and the garage, and the plumber told the superintendent that there was a leak on the line which ran out there but that the man had told him to let it go because he thought the plumber was trying to put something over on him. This cussumer appeared before the Commission and in the end he paid the $50, thanked the Department for its courtesy and presented the Superintendent with a cigar.

Water Planning Committee

ONE of the four major objectives set forth by the Water Planning Committee in its report of January 18, 1935, to the National Resources Board is of particular interest to water-works men. It sets forth as the first of the four objectives: "To develop more productive uses of water, water supply, navigation, power, irrigation, recreation."

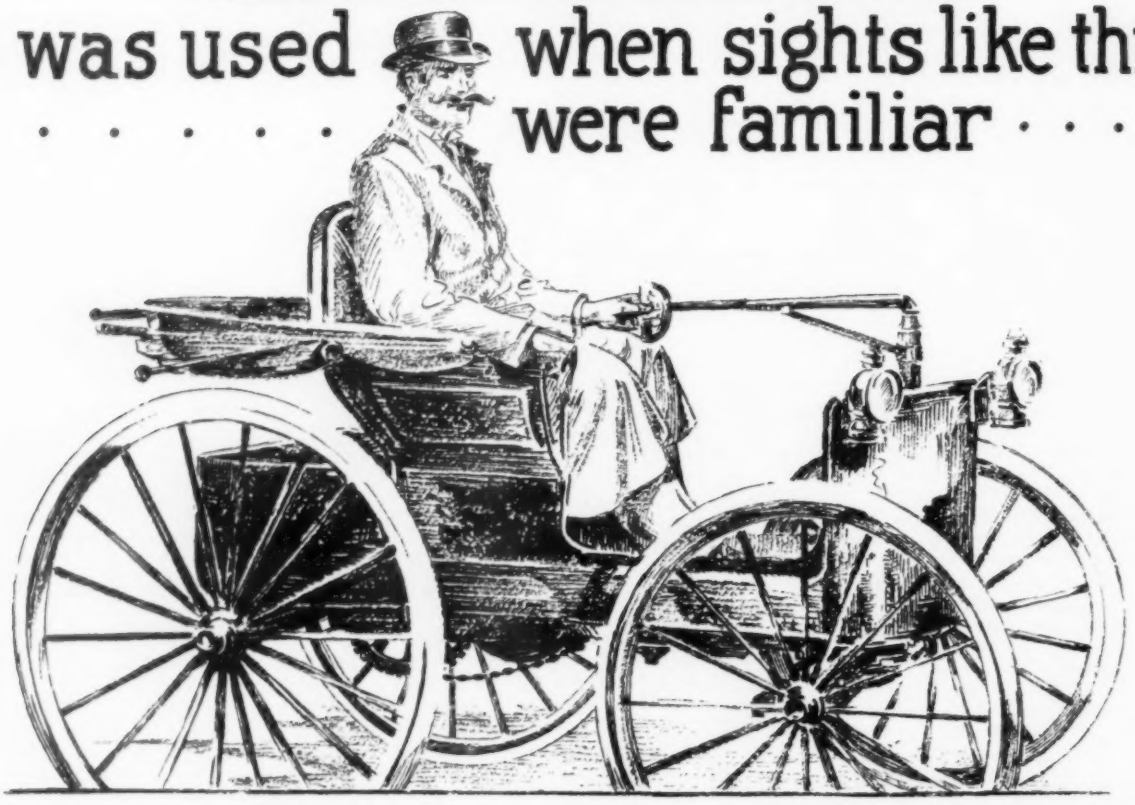
Under the five-point program of the Committee is the subject, "Planning for Specific Projects." The Committee recommends under this heading that studies be initiated promptly in a long series of instances, and always on the basis of the drainage basins as a whole. Thus, we are approaching a national water conservation program in which drainage areas and not states will be the units of study.

The wise law of our forefathers in Massachusetts which made all "Great Ponds" the property of the state has been demonstrated most effectively in the control of these sources of water supply and their distribution to the various communities which can use them most economically. The transferring of this idea to the great drainage areas such as the North Atlantic basins of the Connecticut River, the Delaware River, the South Atlantic and Eastern Gulf basins of the Potomac River, the upper Mississippi, the Missouri basin, the Ohio basin and the southwest Mississippi and Western Gulf basins, as well as many others throughout the West, and the distribution of water for domestic supplies and for power where economically advisable, by a national board, is a step which will be welcomed.

LEADITE

Trade Mark Registered U.S. Pat. Office

was used when sights like this . . . . . were familiar . . . .



. . and that was over 35 Years ago

Consistent EFFECTIVENESS for more than a Quarter Century, has made Leadite the most widely used self-caulking material for jointing bell and spigot pipe,—which bears out the old motto that "There are no substitutes for HIGH QUALITY, UNIFORMITY and SERVICE." Results count: Leadite has been used for jointing thousands of miles of water mains, in most every civilized portion of the globe,—under most every condition known to water line construction.

The pioneer self-caulking material for c.i. pipe.
Tested and used for over 35 years.
Saves at least 75%

THE LEADITE COMPANY
Girard Trust Co. Bldg. Philadelphia, Pa.

No Caulking

Sewage Works Problems

Boone, Iowa

WE had considerable trouble with foaming Imhoff tanks shortly after starting operation of the plant in February, 1927. Owing to extremely cold weather at the time the tanks were filled, there was no bacterial action until about May 1. Within a few days after action started, the sewage was foaming over the tank tops, and this condition continued for about three months.

The sewage was treated with milk of lime pumped into the bottom of the tanks, and also by spraying the surface of the sewage in the gas vents with the same solution. Frequent pH tests of the sludge during this foaming period failed to indicate an acid condition. Chlorination was used for a few days but without any apparent improvement in the condition.

Following a period of very warm weather the foaming subsided, and we have had very little trouble since the first year of operation. We believe that the temperature of the sewage should be maintained uniform to insure successful operation at all times.—GEORGE A. NELSON, City Engineer.

Oklahoma City, Okla.

WE have experienced trouble from foaming in our Imhoff tanks under various circumstances, but chiefly as a result of an excess of packing-house wastes that contain large quantities of hog hair and grease. This trouble is overcome to a considerable extent by blowing air into the Imhoff tanks through the vents. This treatment is partially successful and keeps down foaming for a time. We also have to skim the flow through channels frequently, for wastes of the objectionable type mentioned above will not settle in the tank but accumulate on the top.

Our Imhoff tanks are supplemented in the spring, summer and fall with ferric chloride treatment, which mitigates the trouble to a certain extent.—T. G. BANKS, Superintendent and Engineer, City Water Department.

Lakewood, Ohio

WE have experienced trouble with the foaming of two-story Imhoff tanks for a little more than two years. The tanks were constructed in 1915 and, while we have had foaming at rare intervals, we have not experienced continuous trouble except for the last two years. The maximum amount of foaming seems to occur in the warm summer months, when we have the greatest amount of bacterial activity, but in the last two years we have had foaming also in the winter time.

Temporary measures have been applied to reduce the foaming by wetting down and working the gas vents with a fire stream. This has resulted in the final sludge being drawn of such thin consistency that the resultant cake on a 10-inch draw of sludge is only about 1½ inches. The plant as originally designed was deficient in sludge settling capacities as measured by present-day standards. We are now making preparations for prechlorination and perhaps the addition of lime, and separate sludge digestion. We are hopeful that prechlorination with lime will meet our situation of foaming and that separate sludge digestion will make it possible to recover a thicker cake on the sludge beds by permitting a heavier concentration of digested sludge. —E. A. FISHER, City Engineer.

Curbing Foaming in Imhoff Tanks

Do your Imhoff tanks foam?
Under what circumstances?
How do you overcome this?
Is the trouble recurring?
Have you answers to add to those given here?

Beaver Falls, Pa.

WE have experienced considerable trouble with foaming of our Imhoff tanks from time to time. The difficulty appears mostly in the summer months or when the sludge compartments are overloaded. The trouble is recurring and we have found no permanent remedy for it.

When foaming does occur, we hose down the foam and sludge in the gas vents and apply lime through the gas vents.—IVAN P. LINDEMAN, City Engineer.

Dallas, Texas

WE have 24 Imhoff tanks in the Dallas sewage treatment plant, and sometimes two or three of the group are foaming at a time. This occurs mostly in hot weather, and in the end tanks where the heaviest material is deposited.

We overcome the foaming by skimming the tanks, which are equipped with skimming troughs connected to the sludge drain lines, which handle the sludge from the lower sludge compartment. The gas vents also are skimmed through the sludge line by placing a rubber plunger below the T in that line which holds in the bottom sludge. The upper end of the sludge line or riser is cut off about 2 inches below the water level, and the foaming material floats out with the water and is run into lagoons.

Although this foaming is recurring, we do not consider it any trouble, for the removal of the foam is done with our regular forces, and the tanks are skimmed every day. We draw some sludge out of the tanks every week.—EDGAR WHEDHEE, Sanitary Engineer Dallas City Water Works.

San Angelo, Texas

FROM time to time we have experienced foaming in the Imhoff tanks at the sewage treatment plant. Foaming has invariably occurred when too much sludge has been drawn. Each time the trouble has been corrected by adding lime to the incoming sewage.—J. P. BURDEN, City Engineer.

Wichita Falls, Texas

WE have occasionally had trouble with foaming in our Imhoff tanks. It has usually been traced to waste from undigested feed stuff lowering the pH of the sludge. The foaming has been overcome by correcting the pH value with lime. The trouble has not been recurring, because the source of the difficulty has been permanently removed.—A. H. DOUGLASS, Wichita Falls, Texas.

Madison, Wis.

FOAMING was experienced in the Imhoff tanks at the Nine Springs sewage treatment works at Madison for the first and only time in the spring of 1931. Considerable sludge was withdrawn from the tanks during the preceding winter, and the sludge level was kept rather low. It is my opinion that this fact is most likely responsible for the foaming; but it is also possible that some foreign substances may have interfered with the normal decomposition in the sludge digestion compartments.

In the single instance when foaming was experienced, each tank of a battery of six tanks was taken out of service, one at a time, treated with lime and allowed to rest for a week before being returned to service. Since that time the sludge level in the Imhoff tanks has been kept at a high point, especially during the winter months. This does not present any operating problems, because considerable sludge-bed area can be utilized during the winter months. It is my opinion that foaming is avoided by this program, and therefore there is no further problem. The pH of the surface sludge in our digestion compartments is 6.5 and yet a perfectly normal digestion is secured.—J. C. MACKIN, Superintendent of Operation, Madison Metropolitan Sewerage District.

Sewage Treatment Problems

Send in your suggestion for other problems to be discussed, and with it an outline of your own problem and how it was solved.

IN CINCINNATI...

AS IN HUNDREDS OF OTHER PROGRESSIVE MUNICIPALITIES

WORTHINGTON-GAMON WATER METERS ARE USED

Among the thousands of our meters now serving Cincinnati is a 2 inch meter installed in December 1876 . . .

59 years old
and never out of service

. . . Advanced manufacturing methods . . . painstaking accuracy in executing every detail of unsurpassed meter design . . . correct materials to meet every condition . . . and back of all the consolidated meter-building experience of Worthington and Gamon, with a corporate backing pledged to satisfactory service.

WORTHINGTON-GAMON METER COMPANY
General Offices: HARRISON, NEW JERSEY
District Sales Offices and Representatives:

NRA CODE AG-381

ATLANTA BOSTON BUFFALO CHICAGO CINCINNATI CLEVELAND DALLAS DENVER DETROIT EL PASO HOUSTON KANSAS CITY
LOS ANGELES NEW ORLEANS NEW YORK PHILADELPHIA PITTSBURGH ST. LOUIS ST. PAUL SAN FRANCISCO SEATTLE TULSA WASHINGTON

Branch Offices or Representatives in Principal Cities of Foreign Countries

WORTHINGTON-GAMON

City Paving—Sharing Taxes—Airways

The St. Louis Municipal Asphalt Plant

THE city owns and operates an asphalt plant at which various asphaltic mixtures are prepared and which are installed by city forces. Previous to 1933, the operations were confined largely to patching holes in the streets, and all general construction was handled by contract. In 1932-33 the plant produced 17,640 tons at an expense of $208,000 in place, and employed a total of 128 men. The plant, tools and equipment at that time were in a rundown condition, but during the last fiscal year they have been completely renovated. Despite a late start, the plant produced a total of 38,600 tons in the 1933-34 fiscal year at an expense of $186,000 in place, and employing 85 men. The previous daily ouput had been 75 to 85 tons. After overhauling, the plant was able to average 300 tons per day.

Experiments have been carried on to improve the product, and a very satisfactory mix was developed consisting of 5 per cent asphalt cement and 95 per cent coarse chats, the latter being a waste product from the lead mines in southeast Missouri.

During the summer of 1933 several experimental stretches of resurfacing on old brick and granite block streets were put in place. The costs ran from 35 to 75 cents per square yard, with a fair average of 50 cents per square yard. The surface is absolutely non-skid, even in wet weather. The texture is somewhat porous but seals up nicely under traffic in about two months. During extremely hot summer weather, the surface shows no signs of softening. Streets resurfaced with this mix should last at least ten years with a low maintenance cost.

FRANK J. MCDEVITT,
Director of Streets and Sewers.

Status of Airports and Landing Fields

THERE were 2,297 airports and landing fields in the United States on the first of January, 1935. Of these, 664 were partially or fully lighted for night use.

The total included 702 municipal and 570 commercial airports, 259 Department of Commerce intermediate landing fields, 580 auxiliary fields, 58 Army airdomes, 24 Navy air stations, and 104 miscellaneous government, private, and state airports and landing fields.

California led in the number of airports and landing fields, with 204, while Texas was second, with 145, and Pennsylvania third, with 116. Texas had the largest number of municipal airports—58. Pennsylvania led in number of commercial airports, with 70, and Alaska had 72 auxiliary fields.

Freak in "City Sharing"

WHEN "city sharing" proceeds on a set percentage basis, without strict consideration of local conditions, strange results are invited. California officials are willing to testify to this, following developments of Hornitos, a "ghost town" which flourished in the state's days of pioneer mining.

Hornitos is an incorporated town, but —in its decadence—it has no officials.

Because it is incorporated, and despite the fact that it has no established government, the town is entitled under state law to a share of gasoline tax proceeds. This share, based upon census figures, would be about $70 for the biennium.

As matters stand, state officials are commanded by law to give the $70 to the town. But, because the town has no officials, they find no hands open to take the money.

Hornitos is not even on a state highway, so a plan to spend the money for oil to "lay the dust" on the town's once-busy main street has been developed.

Double Sealing

PAVED streets require vigilant maintenance to preserve investment and insure the riding comfort demanded by an exacting public. Neglect leads to serious deterioration. Leaky pavements allow water to enter, penetrating to the base and often saturating the subgrade; this generally is followed quickly by complete breaking-up of the saturated area. Even heavy pavements cannot long withstand the deteriorating effect of absorbed water.

Sealing with bituminous materials is a very satisfactory method of treating all types of pavement which have cracked or checked, allowing leakage. This method not only seals and waterproofs cracked and badly worn pavements, but gives an additional wearing surface, with non-skid properties, thus preventing many accidents.

The construction of a double seal in Akron is handled as follows: The pavement is first cleaned thoroughly and then all deep depressions are patched. Then, from 0.25- to 0.5-gallon of bituminous material per square yard is applied and covered with from 18 to 20 pounds of broken stone or slag chips per square yard, dragged with a broom and rolled. Following this, 0.5-gallon of bituminous material is applied, covered with 15 pounds of chips per square yard, broom-dragged and rolled.

A single seal may be used on pavements which are not subject to heavy traffic. The single-seal method is similar to the double-seal method, using from 0.3- to 0.5-gallon of bituminous material per square yard, and 18 pounds of No. 6 size chips per square yard.

During 1934, 6 miles of macadam paved streets were sealed with tar, and 10 miles of asphalt, concrete and brick paved streets were sealed with asphalt emulsion, at an average cost of 8 cents per square yard for the single seal and 18 cents per square yard for double seal.

The bituminous materials are applied by the use of a pressure distributor. The flow or distribution is regulated by the size of spray nozzle used and the speed at which the distributor travels. Experience has shown that 18 to 20 pounds of broken stone or slag chips are required to cover each application of bituminous material per square yard. This material is placed in stock piles about 15 feet apart and is spread by hand. The use of a spreader is a more modern method of applying this material, but hand labor has been used during the depression in order to provide more man-hours of work.

The broom drag is a piece of equipment consisting of a wooden frame 7 x 12 feet, with several transverse rows of fiber brooms, and is used to smooth and fill minor irregularities with broken stone or slag chips to insure the smooth surface.

R. H. WISE,
District Engineer, Department of Public Service, Akron, Ohio.

Snow Tunnels on Airways

DIGGING snow tunnels is a task which a field employee of the Bureau of Air Commerce's Federal Airways System was called upon to do last winter. He had to dig three tunnels to inspect the Mount Catherine beacon light on the Spokane-Seattle airway.

The mechanician and his helper started for the beacon site at 7 in the morning, progressing over snow-covered roads and mountain trails so slowly that it was 5:30 P.M. when they reached the base of the beacon tower, high up on Mount Catherine. The snow was 24 feet deep and 4 feet above the tops of the exhaust pipes from the gasoline engines in the shed. Heat from these pipes kept holes open in the snow so that the exhaust gases escaped, and the engines had continued to operate, driving the generators to furnish electric current for the beacon light.

To get into the shed for an inspection of the equipment, the men had to dig a tunnel through the snow. This took 5 hours. When they had completed their work inside of the power house, they started to return through their tunnel, only to find that it had collapsed. Still worse, the snow had caved in against the door so that it could not be opened.

Their only way out of the shed was through a window, and this had to be removed from its frame. They went out through the window and made a new tunnel, and reached the open air. The men were out, but so was the window, so they made a third tunnel, this one to the door so that they could get into the shed, replace the window and then leave by the door and their third tunnel.

Begin Now to Build Up Your Fire Alarm Box Distribution

EVERY city should follow a planned annual program for maintaining adequate fire alarm box distribution by purchasing a definite number of fire alarm boxes each year.

To accomplish this, every fire chief should first make a survey of his existing system by plotting out the locations of his present boxes on a map of his city and also marking those locations where additional boxes are urgently needed. A check up on all obsolete boxes should also be made and then a definite plan laid down to replace a certain number of such boxes each year and add a few new ones so that at the end of a ten year period, the entire system will contain an adequate number of boxes on the streets—all of a modern type.

After your needs have been determined in this manner, you should put a figure in your budget large enough to take care of the purchase and installation of these boxes. Many cities have suffered during the past few years because of reduced appropriations; but, now with business picking up and tax collections improving, you should lay definite plans to start building up your fire alarm box distribution again on a planned basis, so that the efficiency of your fire department will not become too seriously impaired.

We have an interesting booklet "Planning Fire Alarm Box Distribution for Fifty Years," that should be a real aid to you in planning your fire alarm requirements. A copy will be sent to you on request.

THE GAMEWELL COMPANY

NEWTON, MASSACHUSETTS

"A Box A Block"

Public Safety

Many Cities File Voluntary Fingerprints

A NUMBER of cities and the Federal Bureau of Investigations are accepting the fingerprints of citizens for inclusion in non-criminal personal identification files. Among these cities are New York, Newark, Albany, Rochester, Philadelphia, Pittsburgh, Detroit, Fort Worth, Salt Lake City, Los Angeles and San Diego.

New York newspapers recently stated that residents were invited to call at their nearest police station and have their fingerprints made, so that in the event of disappearance the police will have a means of identification. For those who respond, two impressions are made, and both may be taken home or one may be sent to headquarters file. This file is separate from the criminal-record file, where 1,400,000 fingerprints have been accumulated since 1906. Voluntary prints have been collected here since 1926.

The Federal Bureau of Investigation furnishes blank cards, as reproduced on this page, to citizens requesting them. J. Edgar Hoover says: "It is my belief that the citizen is entitled to the protection afforded by having available a positive means of identification in the event he is involved in illness or accident which may incapacitate him. Under ordinary police fingerprint identification filing systems, the advantage of such positive identification is available only to persons with prior criminal records."

During the fiscal year ending June 30, 1934, the Bureau received 558,000 fingerprint cards, of which 47 per cent were identified with prior records comprising 4,642,000 cards. Contributing agencies here and abroad number 7,135.

Fire Apparatus in Siam

ON March 12 it was stated that 11-year-old King Ananda of Siam prefers of all story books: "Three Little Pigs," "Felix the Cat," "Mickey Mouse," and "Ramayana." Two of these picture books are purely American products. The significance of this lies in the fact that at the same interview the King announced that Siam would have a first-class fire department under his reign. Looks like more than an even break for American manufacturers.

Least Fire Waste

WINNING cities in the 1934 National Fire Waste Contest conducted by the National Fire Waste Council and the U. S. Chamber of Commerce were, in different population classes: Philadelphia, Providence (grand award), San Antonio, Lakewood, Ohio, Owensboro, Ky., Geneva, N. Y.

New "All-Purpose" Truck

MAJOR MORRIS, chief officer of the London Fire Brigade, sends the accompanying photograph of what he calls "the new breathing apparatus pump," and describes it as follows:

"This appliance, which is to the design of the fire brigade, represents a considerable advance on previous fire appliances and is the first of its type to combine in one machine a 600-gallon fire pump, a 40-foot extension ladder, hook ladders, oxygen-breathing apparatus, and means of laying out hose quickly. The streamlined body is so designed as to give the men on the appliance complete protection from the weather when traveling to a fire. The large suction hose for coupling up the pump to the hydrants is stowed in tunnels running through the body, thus preventing its becoming damaged when not in use."

DIVISION OF INVESTIGATION, U. S. DEPARTMENT OF JUSTICE

NON-CRIMINAL FINGERPRINT CARD
FORWARDED FOR PERSONAL IDENTIFICATION PURPOSES ONLY

Name ..... Height ..... Build .....
Address ..... Weight ..... Comp. .....
Place of birth ..... Eyes ..... Hair .....
Date of birth ..... Scars and marks .....
Nationality .....

PASTE
PHOTOGRAPH HERE

Remarks: Address of nearest relative or person to be notified

PERSONAL IDENTIFICATION

Name ..... Class .....
Color ..... Sex ..... Ref. .....

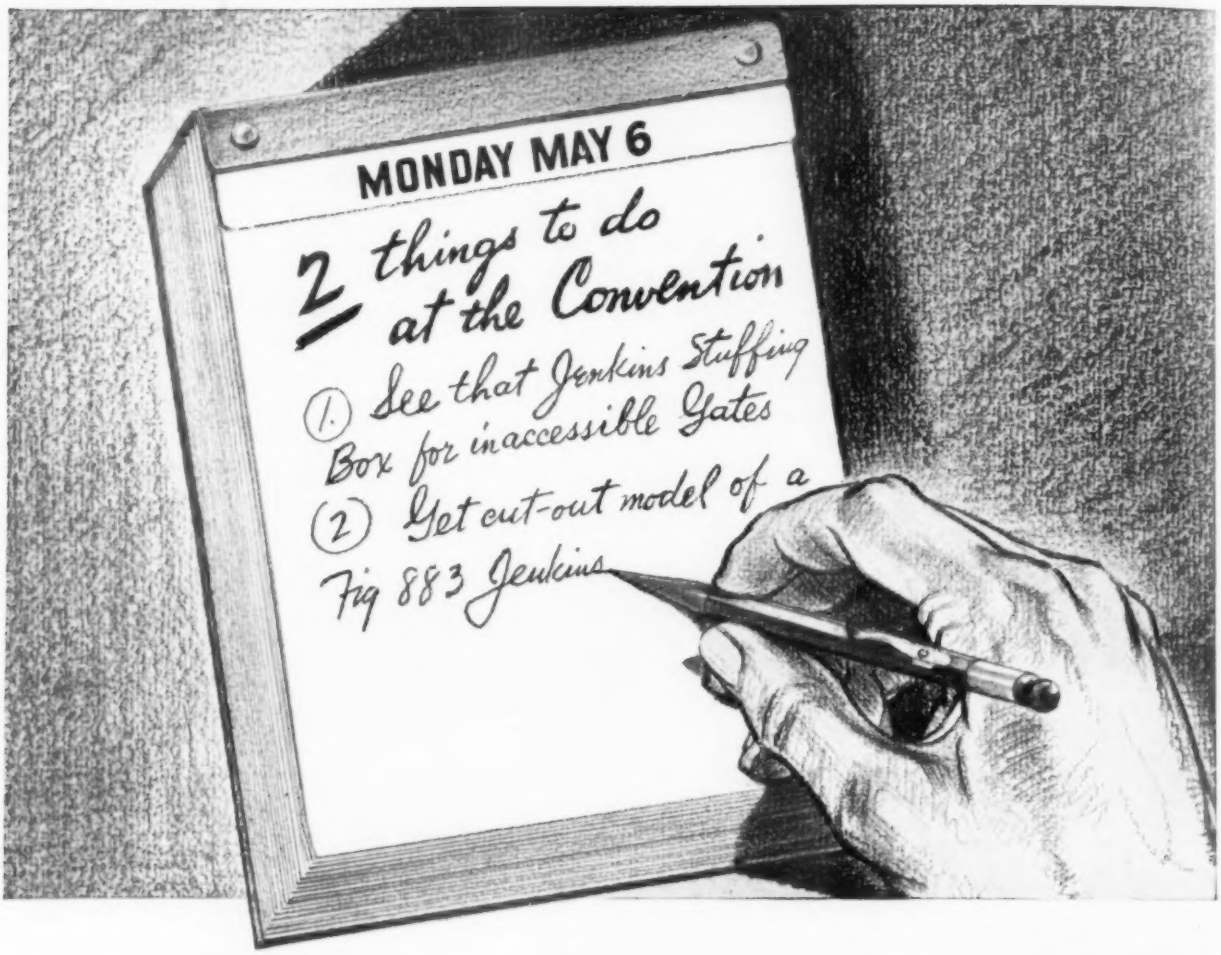
RIGHT HAND

1. Thumb	2. Index Finger	3. Middle Finger	4. Ring Finger	5. Little Finger

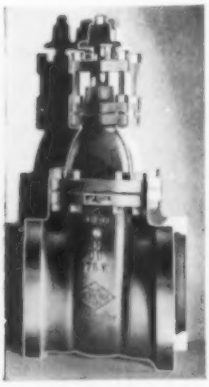
LEFT HAND

6. Thumb	7. Index Finger	8. Middle Finger	9. Ring Finger	10. Little Finger

Classified ..... Assembled ..... Scars, Amputations ..... Signature .....
Searched ..... Verified .....
Index Card ..... Answered .....
Four Fingers Taken Simultaneously ..... Four Fingers Taken Simultaneously .....
Left Hand ..... L. Thumb ..... R. Thumb ..... Right Hand


MONDAY MAY 6
2 things to do
at the Convention
(1.) See that Jenkins Stuffing
Box for inaccessible Gates
(2) Get cut-out model of a
Fig 883 Jenkins

Be sure to come 'round to "Jenkins" booth during the Convention. You'll get a friendly welcome, and a good chance to see a lot of fine valves . . .



GET THIS

—life-like cut-out that accurately shows superior features of Jenkins design and construction . . . with a place to conveniently compare with other makes. KNOW whether you're getting the best Gate for your money.

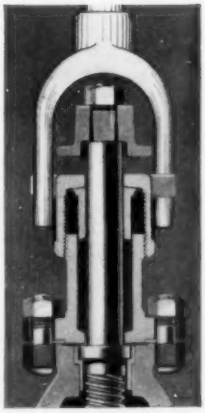
including a big motor-operated Gate that works about as "slick" as anything can.

Also, there will be two attractions of special interest. One is the revolutionary Jenkins Key-Operated Stuffing Box that saves money when used on inaccessible Gate Valves. The other is the cut-out model of a Fig. 883 Jenkins Iron Body Gate Valve which makes it easy to compare a "Jenkins" point for point against other valves, helping you to determine which is the "best buy".

A few minutes at "Jenkins" booth will be well-spent. Pay us a visit.

SEE THIS

—special Stuffing Box Assembly that may easily be applied to new or old Jenkins Gates. Tightened with a key through shut-off box it saves digging to tighten inaccessible Valves.



JENKINS BROS., 80 White Street, New York, N. Y.
510 Main Street, Bridgeport, Conn.; 524 Atlantic Avenue, Boston, Mass.; 133 No. Seventh Street, Philadelphia, Pa.; 822 Washington Boulevard, Chicago, Ill.; JENKINS BROS., Ltd., Montreal, Canada; London, England.

Jenkins Valves

BRONZE — IRON — STEEL SINCE 1864

Mention THE AMERICAN CITY—it helps.

Outdoor Lighting

A Section of *The American City*
Devoted to the Lighting of Streets, Highways, Bridges, Airports, Athletic Fields and Parks, and the Floodlighting of Public Buildings

Good Reports of Mercury-Incandescent Installation in Brooklyn, N. Y.

AN interesting experiment in combined high-intensity mercury-vapor and incandescent street lighting is being worked out in the borough of Brooklyn, that city of 2,600,000 persons across the East River from Manhattan. The importance of this installation is multifold. Merely as an initial installation of eight luminaires, it is the first of its kind in the metropolitan area. Then, it has received definite praise, enthusiastic acceptance, in fact, by the merchants and business men in the vicinity. These men, moreover, are bankers and million-dollar merchants, who accord praise to things which they believe will attract business volume and who would not hesitate to condemn a mediocre lighting system. Their standards are high because—and this is the principal reason for the importance of this experimental lighting—great plans are afoot for the radical improvement of this particular street.

The street is Fulton Street—one of the oldest, heaviest traveled and most famous business arteries in Brooklyn or else-

FREDERICK LOESER & CO. INC
BROOKLYN N.Y.

February 28, 1935

EXECUTIVE OFFICES

Mr. Thomas A. Swift
Downtown Brooklyn Association
45 Willoughby Street
Brooklyn, N. Y.

Dear Mr. Swift:

We have naturally been very much interested in the installation of the eight new street lights adjacent to our Fulton Street frontage and we have observed the result of the installation with considerable satisfaction.

Due to the heavy elevated railroad structure on the street and the moderate amount of illumination by the occupants of the adjacent street frontages, this area was under the old system of lighting, quite gloomy. The new lights have made a great improvement. They seem to produce very little shadow and appear to provide for this area very much the best lighting now to be seen on lower Fulton Street.

We hope they are the forerunner of more adequate lighting for our downtown business section.

Very truly yours,

Walter Hammitt

Walter Hammitt
Vice President

wh:im

Browning King & Co.
Apparel for Gentlemen
547 FULTON STREET BROOKLYN N Y

February 27th 1935

Mr.T.A.Swift,
Downtown Brooklyn Association,
45 Willoughby St.
Brooklyn,N.Y.

Dear Mr.Swift;

In answer to your letter of February 26th 1935, regarding the improved lighting of Albee Square, by the Novalux Luminaires, I would say that it is a perfect transformation. As a comparison I would compare it with the substitution of electric lighting for the gas lamps which Fulton Street was lighted with years ago.

By all means let the light improvement spread out beyond Albee Square, so that we may feel proud of Brooklyn

Very truly yours,

J. Cole Nutting

Vice President:
Browning, King & Co

JCN.HI.

LETTERS FROM BUSINESS MEN AT ALBEE SQUARE, BROOKLYN, COMMENTING ON THE NEW INSTALLATION

can't you **SEE** *where you're going?"*

Four chances out of five, this officer is right. Inability to properly *see* causes more accidents than so-called *carelessness*. And night traffic accidents, in a majority of cases, can be traced directly to inadequate street lighting.

In the year 1933 alone it is estimated that the auto accidents in the United States which could have been prevented *by adequate street lighting* were responsible for 9,900 fatalities and approximately 346,000 non-fatal injuries. With the associated property damage, the economic loss from these accidents amounted to approximately $550,000,000, enough to have paid *all* the street lighting bills in the United States for *the last seven years*.

The economic loss resulting from night traffic accidents means that a community pays for good street lighting *whether it gets it or not*!

Westinghouse, world's largest maker of lighting equipment, provides a complete line of street lighting equipment unsurpassed in durability and efficiency. Westinghouse also maintains an advisory staff of skilled street lighting engineers who are always at your service. For complete details, write Westinghouse Electric & Mfg. Co., Lighting Division, Edgewater Park, Cleveland, O.

WHEN YOU THINK OF *Lighting* THINK OF

Westinghouse

Why not remember to mention THE AMERICAN CITY?

THE DIME SAVINGS BANK OF BROOKLYN

March 4, 1935.

Mr. T. A. Swift, Executive Secretary
Downtown Brooklyn Association
45 Willoughby Street
Brooklyn, N. Y.

Dear Mr. Swift:

We like the new type of street lighting and appreciate having it at Albee Square in front of our building. The lighting is very effective and it will be still better when the elevated structure comes down.

If the system were extended it would not help but make Fulton Street, and any other streets on which it might be used, brighter and more attractive.

Very truly yours,

President

PAB:F

where. It "has everything"— a multitude of trolley cars, an elevated railway, blocks of varying lengths on some of which there are no street lamps, stores ranging from candy shops to metropolitan department stores, and a street-lighting system that must pick its way amid this miscellany and keep its brackets under the L-structure. The big plan, which now awaits unification of the Brooklyn-Manhattan transit system with the city-owned lines—a matter of two or three years, it is said—involves the removal of the elevated structure and the installation of a fine modern street-lighting system.

In anticipation of this eventuality, the Downtown Brooklyn Association, with the permission of the city, decided to furnish a sample of what this new lighting might be, and whet the public and commercial appetite for it on a big scale. With the advice of the Brooklyn Edison and General Electric companies, mercury-incandescent lighting was selected. Engineers regard this type as especially adapted to heavy-traffic thoroughfares and white-way business districts. The site is Albee Square, a triangle dividing Fulton Street and Dekalb Avenue.

The advantage of the location is twofold: it permits a bunching of the new units so that the consistent effect of this type of illumination can be judged and visualized for a larger area; and it is surrounded by substantial business houses that would speak their minds freely on the permanent value of any lighting installation.

The New Lights

The eight units, later to be increased to sixteen, give an illumination approaching daylight and half again as bright as mazda street lighting of the same power. Each luminaire, now mounted on the existing standards, includes a 400-watt high-pressure mercury-vapor lamp, mounted base down, and above it a 200-watt incandescent lamp and suitable reflector. The mercury lamp has an output of 14,000 lumens, giving the unit an over-all efficiency of 29 lumens per watt.

The light from the mercury lamp has a slight greenish-blue tinge, though the major portion of the spectrum is included. Combined with the yellowish light of the incandescent lamp, the light is nearly white, and under it blue is blue, green is green, and red is only slightly altered into brown. The incandescent lamp tends to correct the color value and supplies heat for starting the mercury lamp in cold weather. The mercury lamp is 12½ inches long by 2 inches in diameter. Within the bulb is another bulb in which the arc takes place.

Business Men Enthusiastic

The sample letters show what business institutions abutting Albee Square have to say about this lighting installation. Bear in mind that there are only eight of these lamps, that they are on the old standards, and that the elevated structure takes the edge off the demonstration. In fairness, it will of course be understood that these are not technical opinions, that costs have not yet entered the picture, that it is not an enthusiasm for any particular type of street lighting per se but for the obviously better lighting that has here been provided. What they are rooting for is distinctive lighting that attracts crowds, that pleases all classes of people through its worth, and makes many return next day to the scene of their enjoyment where perhaps the night before they were captured by some window display. In this connection and as indicating the caliber of the stores in this district, The Namm Store (just below this square) won the Electrical Association of New York prize for the best-dressed window in all Greater New York in 1934, and Frederick Loeser & Co. (facing this square and its new lights) won it in 1933.

MERCURY-INCANDESCENT LUMINAIRE

The business men, then, are demanding a first-class street-lighting system on Fulton Street, just as they are determined that the L-structure shall come down as soon as possible. They intend to make this street a first-class shopping district. Toward this end, a year and a half ago saw the last of the projecting signs laid against the façade. Now only flat signs are permitted, extending not more than 12 inches from the building line.

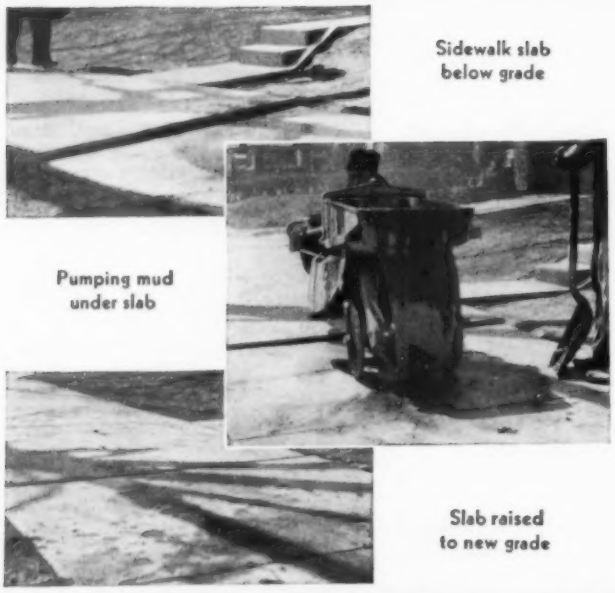
Municipal achievements, however admirable and needed, that are put over in spite of popular protest, ignorance or lethargy, are likely to fail or to wait a long time for approval to catch up with them, and they are never fully successful until the people recognize their value. Consequently, the lively business interest in this demonstration practically assures public support of a fine lighting system to be installed on this street when practicable. And if on this street, why not on other streets?

These letters are not merely from Brooklyn business men, not merely from men in business on Fulton Street; they are from men in charge of business properties that face these new lights. Will the buying public approve this type of lighting and be attracted to the district where these business properties are located? These men believe it will. Other Fulton Street business men believe it will. Men and women entering this newly lighted area ask policemen what these lamps are, and then stop and examine the lighting. It seems safe to record that the Brooklyn public believes it would like to see this entire shopping district thus illuminated. Can it be done at reasonable cost?

The Lights of Paris, Ky.

WHEN the city of Paris installed its own municipal plant, described on pages 64 and 65 of the February issue, it added 90 lamps to its street-lighting system, making it, in the words of its General Superintendent, one of the best-lighted cities in Kentucky. "Of course," he writes, "the outstanding effect came from the White Way, with 300-watt lamps on both sides of Main Street, spaced 200 feet, or eight to the block, and one on each of the four corners of the street intersections for ten blocks. It is possible to read a newspaper anywhere on the street."

MUD-JACK METHOD



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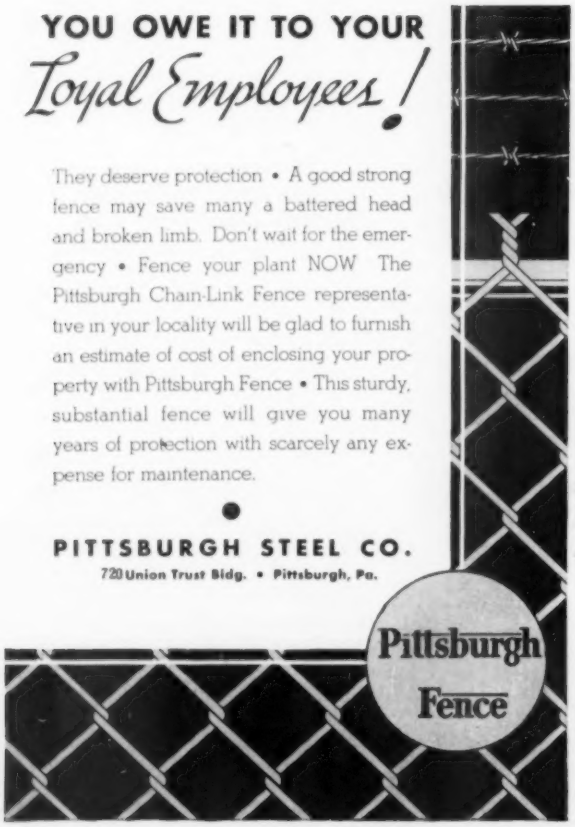

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MAY, 1935

Vol. L, No. 5

The American City

470 Fourth Avenue
New York

35 Cents, $2 a Year

The Logic of Universal Metering

By MAURICE P. DAVIDSON

Commissioner of Water Supply, Gas and Electricity,
City of New York

IF a water-works system is to be operated on a sound businesslike basis, guesswork in connection with annual water charges must cease and payment must be made in accordance with the quantity consumed. Ample water must be provided for legitimate use. Willful waste must cease and the rates must be equitably applied, so that all will pay their fair share of the cost for supplying water and make the system self-supporting.

Without universal metering, water waste and leakage continue and have reached enormous proportions. Water today is a highly processed commodity. Filtration, sterilization, taste, odor removal and pumping all cost money, and this cost is increasing.

The object of universal metering is not to curtail but to increase the proper use of water; for, with a given supply, restriction of waste increases the quantity remaining available for use and will not restrict any legitimate use of water but will wage war on waste quite effectively.

Reduction of Waste

Reduction of waste should be considered not only from the standpoint of finance but also in relation to protection from fire hazard and to provision of adequate service and a safe water supply for the city.

The advantages that have been gained in cities at present universally metered are many and far-reaching. Their existing systems have been made to provide ample water at all times; enormous waste has been stopped; undetected sources of water loss located; pumpage costs reduced; life of equipment prolonged; service improved; revenue increased; costly enlargements to systems deferred, and systems made self-supporting.

New York the Outstanding Laggard—180 Million Gallons Daily Wastage

This spirited plea and economic argument for the universal metering of water services has just been prepared by Commissioner Davidson, in his campaign for abolishing New York's antiquated methods of controlling and charging for water consumption.

As the Commissioner has pointed out:

"It is a sad commentary, in so far as the city of New York is concerned, that while it stands preeminent in its source of water supply and distribution, it has failed to keep abreast of modern control and business practices, with the result that it is the outstanding great backward city from the standpoint of purveying water to its consumers, still functioning to a large extent under an obsolete system of flat rates instituted in the year 1857, with prices unchanged until January 1, 1934, when a 50 per cent increase went into effect."

It has been well said that no person dreams of letting a gas stove burn when it is not in use, or of leaving electric lights turned on when they are not needed, but a dripping faucet may be neglected for months. The explanation of this indifference of course lies in the fact that wasted water costs nothing extra.

Meters Should Be Municipally Owned and Maintained

Under the provisions of the Greater New York Charter, the Commissioner of Water Supply, Gas and Electricity is authorized in his discretion to cause water meters to be installed in business places only. However, this law gives the owner of any building the right to apply for a meter. At present substantially all water used for commercial and industrial purposes is metered. In addition, there are approximately 26,000 meters in use covering the supply for domestic purposes. The owner of a building is required to engage a licensed plumber and all expense in connection with the meter, its setting and repair must be borne by him. Repairs to meters in many instances exceed the actual cost of the meter, for a licensed plumber must remove the meter, and deliver it to a meter manufacturer or a recognized repair company for repair. It is thereafter sent to the meter testing station of the Department, where it is tested. If found to be within the required degree of accuracy, it is turned over to the plumber and then replaced in the building.

If the city owned and maintained the meters, several jobs could be combined in one trip. Meters could be installed, repaired, tested, adjusted and sealed at one time, and in general a better quality of work would no doubt prevail.

Universal metering should be universal in fact and in-

clude all public buildings and charitable institutions without any exceptions. The Department should be conducted in the same manner as an efficiently run business concern and should show an example to private consumers by keeping an accurate record of the amount of water supplied to other departments, insisting upon payment at regular rates for all water so supplied.

Charitable institutions should be provided with a reasonable amount of water free of charge, but water consumed in excess of that amount should be charged for at the usual meter rate, for experience shows that many exempt institutions are prolific users of water and allow it to run to waste, which would not happen if their use of water was limited.

Leakage and Other Causes of Water Waste

The house-to-house inspection of leaky plumbing fixtures now in progress shows that the total leakage from plumbing fixtures in unmetered premises, including public and exempt buildings, at the beginning of this work in the early part of 1934, amounted to 180 million gallons daily, which is a conservative estimate. However, the house-to-house inspection of leaky plumbing fixtures is not in itself a satisfactory method of curtailing waste over long periods of time, as has been conclusively proved in other cities.

A large source of waste that could not be controlled by house-to-house inspection work, but that would be greatly reduced by universal metering, is the use of large streams of water to prevent the freezing of pipes in winter. Other causes of water waste include unnecessary sprinkling of lawns; careless use of hose for cleaning automobiles and for sprinkling sidewalks, streets and roofs of apartment buildings to cool the air in summer; the use of wasteful hydraulic pumps, motors, siphons, ash lifts and other water-consuming mechanical devices such as water-cooled refrigerators and air-conditioning units.

If the policy of universal metering were adopted beginning about January 1, 1936, on a three- to five-year program, and house-to-house inspection work continued up to that time, the reduction in consumption at the end of the metering period is estimated at 20 per cent of the normal requirements from municipal sources.

Per Capita Consumption

The per capita consumption figures are based on a population of 6,575,000, which is the estimated population served by the municipal system.

The average per capita consumption in *residential* premises now metered is as follows:

	High Class	Middle Class	Low Class	Combined
One-family buildings	84.7	51.8	36.2	48.8
Two-family buildings	56.5	48.3	38.9	45.4
Tenements without elevators ..	89.4	50.0	43.9	51.5

The foregoing figures are based on a total of only 444 metered buildings, which is a little over one-tenth of one per cent of the total number of buildings in the city, and may or may not be representative of the domestic consumption under universal metering. The per capita consumption in elevator apartments, based on the measured supply to three buildings in Manhattan and twelve in Brooklyn, averages 116.3 gallons per capita, which is probably higher than the average for all buildings in this class. It is believed that an average of 50 gallons per capita per day would be a liberal allowance for domestic consumption in the city under fully metered conditions. The domestic per capita consumption in all cities that are now fully metered, of which we have a record, is below 50 gallons, with the exception of Oak Park, Ill., where the domestic per capita consumption is 52.5 gallons.

Some of the more important facts that affect the per capita demand are: the geographical location of the city; the number and kind of industrial plants; the general character of dwellings; the prevalence of lawns and shrubbery; the charges for water; the pressure provided; the presence or absence of sanitary sewerage systems, and in a large measure the amount of work done on the control of waste, whether the city be partly metered or fully metered.

A study of the general effect of universal metering on the consumption of water in large cities where the supply is not metered, or partially metered, is interesting because it shows that in such cities there is a tendency to use twice as much water as in those where the supply is fully metered.

Conclusions

The conclusions to be drawn from the statistical data, estimates and other information presented, in so far as they have a bearing on the water-supply system, indicate the following main points:

1. In order to avoid the necessity of curtailing the consumption before the advent of water from the next large development, a program for the maximum conservation of supply should be immediately adopted and carried out. This maximum reduction can be accomplished only by systematic underground waste work in all boroughs, combined with universal metering.

2. The estimated reduction in consumption of water by universal metering, at the end of the metering period, is 20 per cent of the normal requirement, or approximately 200 million gallons daily at the present time. This reduction, however, can be effected only by metering all buildings in the city supplied with water from municipal sources, including public buildings and charitable institutions.

3. By reducing the consumption demand, universal metering would result in a saving due to a reduction of the amount of pumping in the city and lessen the outlay required for strengthening the distribution system to provide adequate service for domestic needs and fire protection. It would also reduce the cost of sewage disposal.

An Automatic Softening Plant for Utica's Water Supply

Consolidated Water Co. Improves Hard Spring Water for Domestic Use

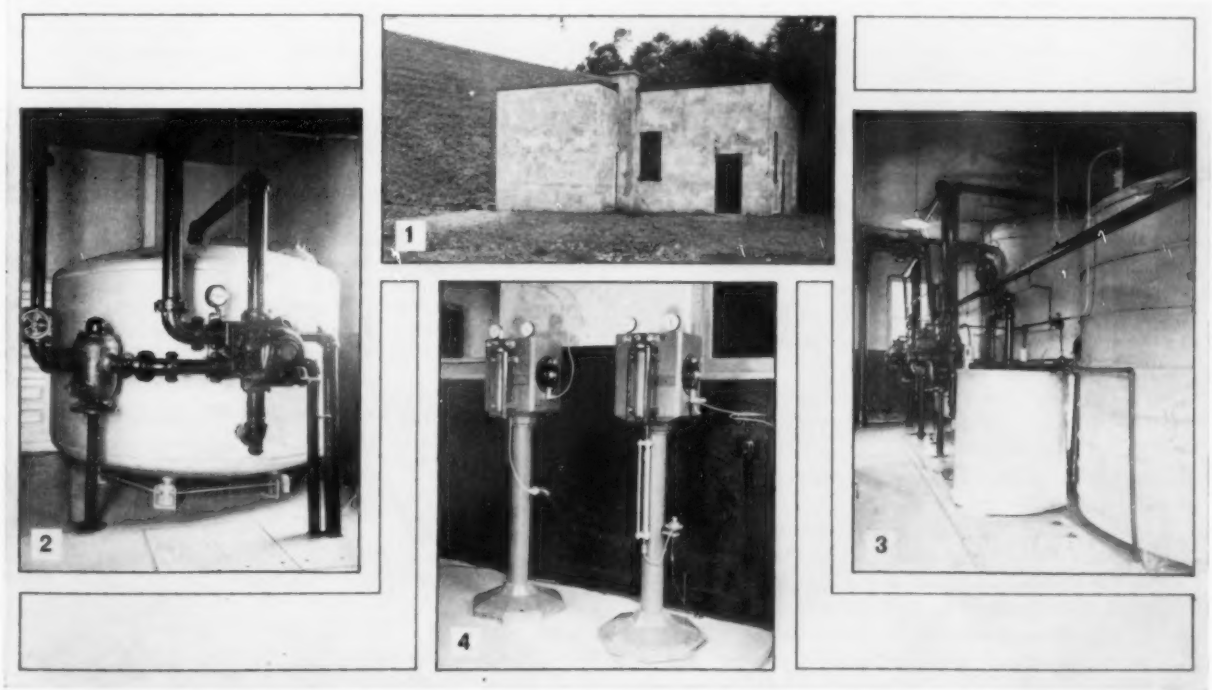
RECENT improvements in the domestic water supply of Utica, N. Y., include the softening of the Graefenberg supply, one of the two sources of water for domestic and industrial use. The Hinckley supply or West Canada Creek water rights were owned by the Consolidated Water Co., of Utica, prior to the building of the Hinckley reservoir by New York State as an equalizing basin for the New York State Barge Canal. The state gave the company the right to about 55 million gallons daily from this source, which has a hardness of 30 parts per million. The reservoir is 20 miles north of the city and water is delivered to the city by gravity through a 24-inch cast iron pipe to the two lower pressure zones, which consume about 90 per cent of the water in the city.

The Graefenberg supply is 5 miles from the city and consists of the Graefenberg spring, a single large spring originally used as a water cure, and numerous other springs on lands owned by the water company. The combined constant flow is 750,000 gallons daily, and its hardness varies seasonally from 150 to 500 parts per million and is highest in summer, when the inflow of surface water is least. There is also a fairly large protected watershed area which furnishes additional water to this supply. The water company is using only 300,000 gallons per day from this source, but watches leaks very carefully so as not to lose any of this nearby constant source of water. Water from the Graefenberg supply is delivered to the high-service zone through a 12-inch line from the new softening plant to the city, where the pressure is reduced by a Ross regulator. Some water is taken off above the regulator for the highest level residential districts, but this is a relatively small amount.

A 12-inch cast iron line connects the two intakes in the Graefenberg reservoir to the new automatic zeolite softening plant. There are two intake lines, one high-level and one low-level, leading to the 200-foot line to the plant. These two intakes allow a selection from either level to secure the better quality of water.

The Softening Plant

The water-softening plant consists of two Permutit zeolite softeners, 9 feet in diameter by 8 feet high, a pressure sand filter and the necessary brine solution tanks, chlorinator, ammoniator and other accessories. Water



THE EQUIPMENT WHICH SOFTENS THE GRAEFENBURG SUPPLY OF THE UTICA, N. Y., WATER SYSTEM

1. This small building houses the complete automatic softening plant. 2. The raw-water pressure filter with hand-controlled multi-port valve. 3. Two automatically controlled zeolite softeners in the background, and the small concentrated brine tank in the foreground. 4. The chlorinator and ammoniator

from the reservoir flows to a multi-port valve at each of the softeners, which are controlled entirely automatically. This control is so complete that both softeners cannot regenerate at the same time; thus there is always one in service to provide softened water for the city. Each of the zeolite softeners removes all hardness from a volume of water predetermined by the setting of a contact on a special recording head, attached to a 3-inch Trident Crest meter on each unit. When this predetermined amount of water has softened by down flow through the zeolite bed, a relay actuated by the contact setting on this meter head starts the motor turning the multi-port valve.

Automatic Operation

This motorized valve turns until wash position is reached, at which point a contact is broken, stopping the motor, and also replacing a Telechron clock in operation, which allows the reverse flow water through the zeolite bed to continue for a set period of time. This wash operation cleans the accumulated deposit from the top of the zeolite sand and regrades the material for the next operation, the same as a regular rapid sand filter. At the end of this period, the multi-port valve is rotated to "regenerate," and first of all a brine pump takes up the reclaimed brine from the wooden tank, and pumps it through the distributing header over the top of the zeolite bed, and it runs through the zeolite bed to waste. This process is not time-governed, but the volume is governed by floats in the tank. When the tank has been practically emptied, the float shifts the operation so that saturated salt solution is pumped by a 2½-inch Worthington brine pump to the header, with the waste valve at the bottom of the tank still open.

At the end of this period, which is also governed by a volume-controlled float in the saturated salt solution tank, the multi-port valve is moved by the float relay to "rinse," and from then on, the raw water comes into the softener from the source of supply, and instead of going to waste, the salt solution remaining in the softener is turned into the reclaimed brine tank. This is a time-controlled operation, the length of the time having been found by experiment, so that all of the salt is removed during the rinsing process. All of the rinsing water goes into an upper tank that discharges a certain amount into the wooden reclaimed brine tank. As it gets near the limit where no salt remains in the water, the rest is wasted, so that it is the more concentrated part of the partially spent brine solution which goes to the reclaimed brine tank, and the more dilute part is wasted.

At the end of the 12-minute rinsing period, the multi-port valve turns again to "softening" and resets the volume control for softening by turning the meter hand back to the starting point. The complete period of regeneration is one hour.

In this manner, by making adjustments in the time and volumetric measurement according to the hardness of the water, the whole system of softening becomes automatic and it is only necessary to keep the saturated solution tank on the hill above the plant filled with water and salt.

The value of salt recovery on a water of 200 parts per million hardness is considerable. About 800 pounds of salt is used per day for softening 350,000 gallons of water when the brine solution is reclaimed. A total of 1,200 pounds of salt would be necessary for this same service without reclaiming.

A 1-inch Burke centrifugal pump delivers water through a ¾-inch Trident meter to the wet salt storage pit on the hill and to a pressure tank in the filter building, and also supplies the keeper's house.

A tap from the 12-inch line leads from the reservoir to the softening building and to the 10-foot diameter by 5-foot pressure filter for raw water from the reservoir. This filtered water is used for proportional mixing with the zero hardness water to give a domestic supply of approximately 5 grains per gallon hardness. The pressure filter is now washed by hand control of the multi-port valve, but plans are under way to convert this to automatic control.

Other Equipment

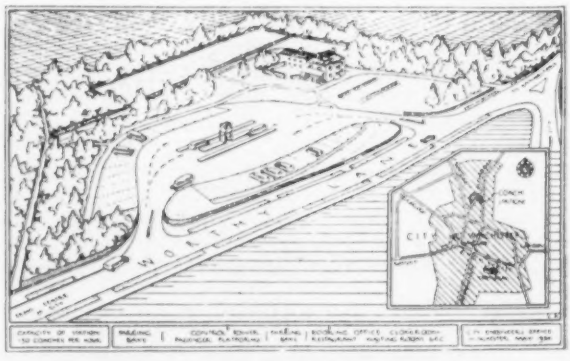
A Builders' Iron Foundry venturi meter with a Simplex recorder is installed at the head of the 12-inch line from the softening plant to the city, to measure the supply from this source. The filter building is equipped with an automatic oil heater, which is inspected daily by the chemist of the water company when he visits the plant to see that all equipment is in perfect operating order. A Wallace & Tiernan dry feed chlorinator is installed on the raw-water line, and a W & T ammoniator gives a dose of ammonia after the waters are mixed.

A 250-000-gallon elevated steel tank is installed on the Utica system in New Hartford at the extreme end of the line, acting as an equalizing and balancing storage.

George C. Hodges is President and Harry B. Miles Executive Vice-President and General Manager of the Consolidated Water Co. of Utica, with J. Walter Ackerman as Chief Engineer and General Superintendent. The new zeolite softening installation was made under the supervision of L. J. Griswold, Engineer, of the Water Co. The plant was placed in operation September 1, 1934.

Winchester, England, Builds a Bus Terminal

IN England bus companies that enter a city are generally required to use regularly designated terminals, in some cases provided by the city for the transportation company, in order to control conditions of congestion and service. A recent number of the London *Transport World* describes the new terminal in Winchester, the plan of which is shown below. An acre of the 5-acre estate bought by the city is covered with reinforced concrete 7½ inches thick for the station and its facilities. The attractive surroundings have been preserved. About 40 busses can be accommodated at one time, and the capacity is 150 an hour.

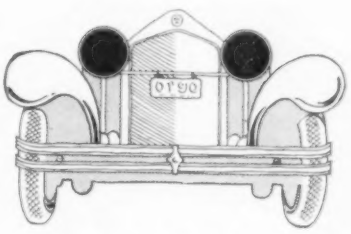


PLAN OF BUS TERMINAL FOR WINCHESTER, ENGLAND

Antennas Are Important

By J. G. BEARD
Police Radio Division, Westinghouse Electric & Manufacturing Company, Chicopee Falls, Mass.

WHEN consideration is being given the purchase of radio transmitting equipment, the type and structure of an antenna system should be given at least as much weight as the actual transmitter itself. No matter how good a transmitter may be nor how much power it may be capable of generating, it can be seriously handicapped if it is connected to an inefficient antenna or radiating system. In police radio systems, the antenna is as important to the transmitter as the men themselves are to the force. A good antenna makes a good transmitter better. Spending a few dollars more for a good and efficient antenna at the time the installation is being made should be given serious thought by those who handle the purse-strings; for a poorly done erection job on the antenna may result in a large annual bill for maintenance which will not be necessary if the antenna structure is adequately designed and properly erected.



AS FOOLISH AS A POOR ANTENNA

Speaking generally, it may be said that a poor and inefficient antenna will require a larger and higher power transmitter than a good and properly designed antenna, to cover the same territory with equal results. It is therefore reasonable to state that with the proper antenna a smaller size of transmitter will cover the territory as adequately as the larger transmitter and poor antenna combination. Obviously, it follows that the smaller the transmitter, the lower will be the annual maintenance and operating cost for vacuum tubes and power.

When we speak of an increase in efficiency of the antenna system, we mean its efficiency as a radiator of radio waves. An antenna system may be fashioned from the finest of material and erected in a manner beyond reproach, and if this antenna has not been given careful electrical design consideration it may still be an inefficient radiator. Excellent material and workmanship will not compensate for poor electrical design. Design, workmanship and material are all essential qualities, none of which should be anything but the very best.

To equip a good transmitter with a poor antenna is like putting smoked glass in the headlights of your car.

There are two general types of radiating systems in use at present. The most common is that type of antenna which radiates equally well in all directions. These are usually spoken of as non-directional radiators. While most of our antennas are of this type, there are special cases which require so-called directional antennas which have the peculiar faculty of sending most of their energy in a desired direction. For instance, if we have the transmitter located on the seashore and it is going to handle messages for the state police, who do most of their traveling on land, we certainly shall want the antenna system to send most of its energy in the shoreward direction. Fig. 1 shows a field coverage pattern which can be produced with such an antenna. There may be other cases where we wish to cover a long, narrow state, or perhaps a strip of a state along the main through highway (see Fig. 2). We might consider still a third case which would require an especially strong signal in a certain territory where reception was normally difficult. In case it was not possible to locate the transmitter in this territory, an antenna arrangement could be provided that would produce a field coverage pattern similar to Fig 3.

It has been stated that the electrical design of the antenna is important. Fig. 4 has been drawn to illustrate how much more area may be covered with the same amount of transmitter power when the antenna is electrically a better job than before. One of the best ways to make an antenna better electrically is to make it longer and higher in the case of a horizontal antenna, and higher in the case of a vertical antenna. In Fig. 4, the dotted circle is the radiation pattern for a given amount of power into an antenna whose vertical height is ¼ wave length. If the physical height of this antenna is increased until it is ½ wave length high, then the field pattern will be as the full line indicates. It is obvious from this figure why it pays to put up as tall an antenna as possible.

HOW THE ANTENNA CAN IMPROVE THE OPERATION OF A POLICE RADIO

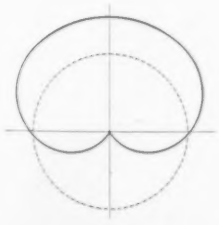


Fig. 1. On the seaboard with land to the north

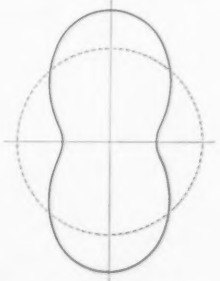


Fig. 2. In a long, narrow territory

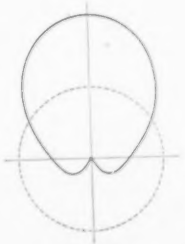


Fig. 3. For a strong signal in territory where reception is difficult

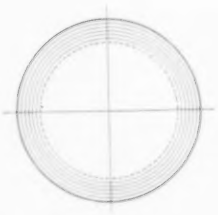


Fig. 4. The rings are the larger territories covered by better antennas

The Federal Communications Commission, the Federal body which makes and enforces the laws regarding our radio transmitters, places very definite limits on the amount of power a transmitter may generate. These limits are generally based on the population to be served. Since the Commission does not restrict the size of the antenna arrangements, in cases where the maximum allowable power is being used and satisfactory coverage is not being made, we can always resort to better antenna structures to extend the radius of effectiveness.

In summary, it is worth remembering that a good transmitter plus a poor antenna equals a poor installation, and, conversely, a good transmitter plus a good antenna equals a good installation. An antenna, like any other outdoor structure, is at the mercy of the elements 24 hours of the day. When considering police radio systems, money spent for a good antenna system is taxpayers' money well invested.

PWA Slum Clearance Makes Halting Progress

EARLY in April the photograph here reproduced was released by the PWA Housing Division as a graphic illustration of progress in the Federal Government's slum clearance and large-scale low-rent housing program. In less than two weeks another PWA release stated that architects working on plans for this proposed $12,500,000 project in Chicago had been ordered to suspend all activities.

The official statement said in part:

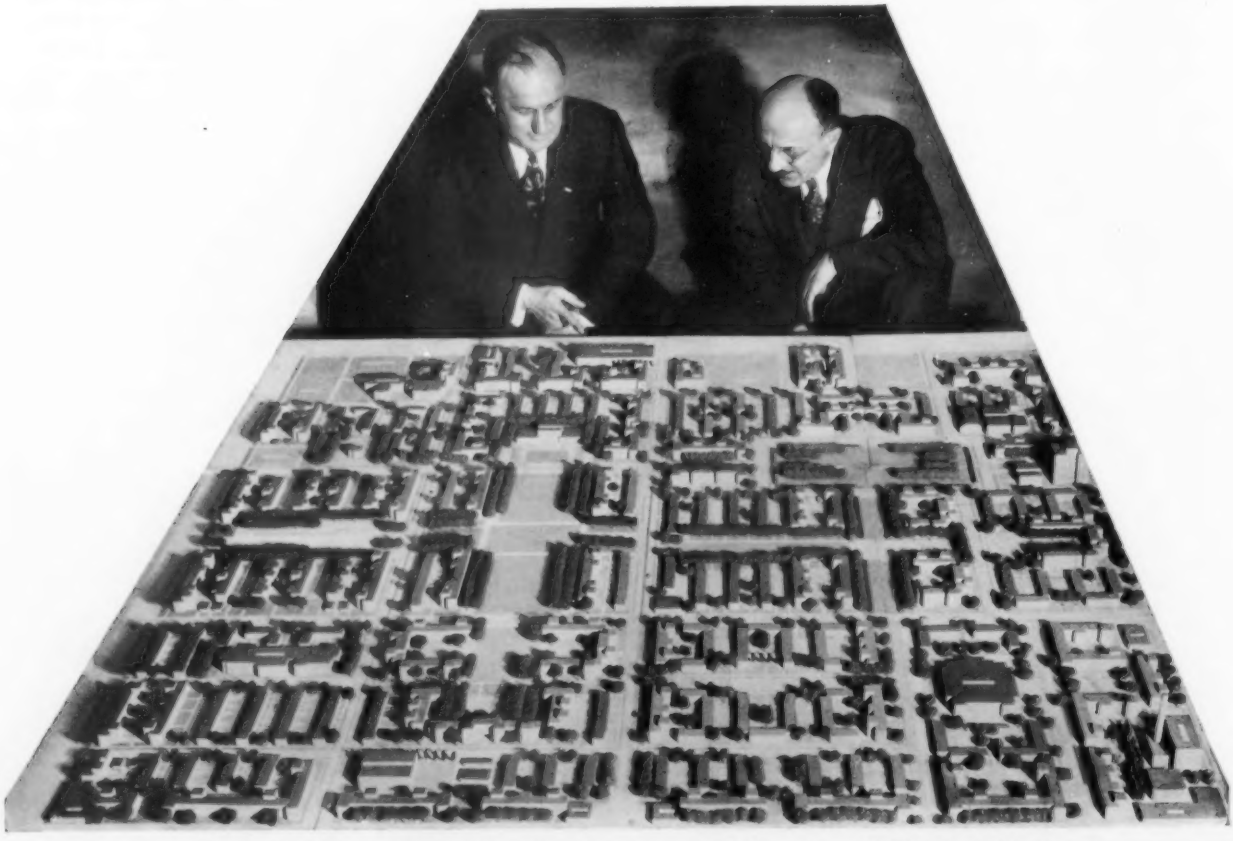
"Organized attempts to secure from the Federal Government prices for land in the project site many times in excess of fair cash value set by current appraisals and beyond the prices which would permit low-rent housing; attempts of mortgage companies in effect to use the Government as a collection agency; deliberate attempts to speculate in mortgages, and solicitation of property owners to sign contracts for legal representation to obtain prices in excess of Government offers on contingency fees have been uncovered in the area.

"As a result, acting on the recommendation of Col. Horatio B. Hackett, Director of the Housing Division, Administrator Ickes has authorized abandonment of a substantial portion of the 165-acre West Side project. Administrator Ickes has authorized the Housing Division to continue the project on a greatly reduced scale if some smaller contiguous area within the site can be purchased at a fair market price—otherwise the entire $12,500,000 project which was to replace a huge amount of substandard housing in Chicago will be abandoned."

Two subsequent releases indicate progress in Cleveland and Detroit. Formal announcement was made on April 17 that the PWA will establish a $2,800,000 West Side slum clearance and low-rent housing project in Cleveland, and that attorneys of the Department of Justice had filed a declaration of taking in Federal District Court in Cleveland to acquire title to a 22-acre site for the development.

"The Cleveland West Side project," says this release, "is the sixteenth Federal project announced by the Public Works Administration in its nation-wide campaign to abolish slums and to replace them with modern, decent housing. Plans for other developments, many as yet unannounced, are being pressed in some thirty cities. Seven limited dividend building projects have been completed or are under way, and one all-Federal project is now under construction with several others scheduled to follow shortly."

On the same day detailed plans for a $6,000,000 PWA slum reclamation and low-rent housing project in Detroit were announced, with institution of condemnation proceedings in Federal District Court there to acquire title to a 51-acre site for the improvement.



COLONEL HORATIO B. HACKETT (left) AND A. R. CLAS, DIRECTOR AND ASSISTANT DIRECTOR OF THE HOUSING DIVISION OF PWA, LOOK OVER A STUDY MODEL FOR THE HUGE PROPOSED WEST SIDE HOUSING PROJECT IN CHICAGO

Municipal Plants Can Compete— They Are Doing It

By R. E. McDONNELL
Burns & McDonnell Engineering Company, Kansas City, Mo.

IT is usually taken for granted that such utilities as water, light and gas are not competitive—that they are natural monopolies; and for rendering the most efficient and best service the utilities should be either entirely municipally operated or entirely privately operated, and the monopoly should be either public or private.

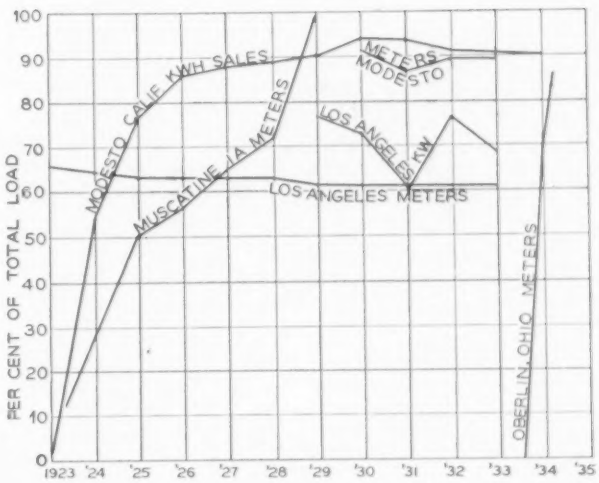
It is a well-recognized fact that a duplication of facilities is an economic loss. This applies, perhaps, more to the utility business than to any other line of business. Notwithstanding this fact, there are a large number of competitive light and power installations. In some cases more than one private company renders service in American cities, and we have a few instances where as many as three or four concerns supply electricity to the same community.

In reviewing the statistics of municipally owned plants compiled from the U. S. Census reports, the records show 1,802 municipal systems in 1932, and in 1934 there were 1,875 municipal lighting systems. A check and analysis of these show that approximately one-fifth of the municipal plants are competing with private utility installations. Some of the largest municipal plants in the United States are competitive, and include those in Los Angeles, Cleveland, Columbus, Seattle and Springfield, Ill. Other large cities, such as Detroit and Chicago, have a partial competitive business; the municipal plant furnishes electricity for municipal requirements only. There are, however, a large number of municipal lighting plants that are strictly competitive for residential, commercial and power requirements.

Reasons for Competition

I doubt if there is a city in the United States that has without reluctance constructed a competitive municipal plant. The municipal plants throughout the country have been constructed as the only permanent means of procuring for the municipalities lower light and power rates and also relieving, in whole or in part, the burdens of taxation.

In my own engineering experience of 38 years in behalf of municipal projects, I cannot recall a single instance where a long, tedious and determined effort was not made first either to acquire the utilities or to procure a reasonable rate reduction. Failing in this, the only recourse left to the municipalities has been the construction of their own independent municipal plants. The attitude of the companies has been, universally, to resist any efforts on the part of the municipality to purchase. Through court procedure, resistance has always been strongly against condemnation. It has been a long-drawn-out procedure in behalf of municipalities to precure ownership of the utilities. The secret of the utility companies' wanting to hold on to their properties has been the enormous profits they have been able to reap in the utility service. They have been unwilling to grant the municipalities the privilege of enjoying the same profits that the private monopolies delegate to themselves.



RATE OF TAKING LOAD

MODESTO (13,842 population)—Hydroelectric plant began operation 1923; curve shows kwh sales for 1923-34 and per cent of meters taken 1930-33; private company had 3,746 meters in 1922 and 588 in 1933; municipal plant had 4,085 meters in 1924 and 4,460 in 1933. MUSCATINE (16,773)—Steam plant began operating 1924 and took over private company 1929; original investment $350,000; net value $922,737 in 1932; original bond issue carried 3,245 for and 1,750 against. LOS ANGELES (1,231,830)—Hydroelectric plant began operating 1916, and in 1933 had 61 per cent of total number of meters and furnished 69 per cent of kw (see curve 1929-33); municipal and private systems compete chiefly in downtown business district, and municipal system takes 70 per cent of new business. OBERLIN (4,292 population)—diesel plant, described in THE AMERICAN CITY for March, began operating July 23, 1934, and on February 1, 1935, had 1,251 of 1,456 meters. Following are figures for two other plants not on above chart: SPRINGFIELD, ILL. (73,132)—Steam plant began operating 1916, and now has 71 per cent of total meters and supplies 41 per cent of kwh sold; per cent of consumers in 1933, residential 75%, commercial 50%, power 25%, street lighting 95%. PIQUA (16,011)—Steam plant began operating October, 1933, with 36 per cent of the meters, and at end of 1934 had 90.9 per cent of them: residential consumers 91.5%, and power 88%; bond issue was carried two to one.

In resisting rate reductions or municipal ownership, the companies would in one breath protest that they were losing money or doing business on a close margin, and in the next breath would use every argument and recourse possible to hang on to this so-called "losing investment." The outcome of these competitive installations has been predominantly in favor of the municipalities. The companies usually cling longer to the industrial and power business, while the municipalities' gain has been rapid in the residential and domestic service.

Private companies, in their efforts to dissuade the public from establishing their own municipal plants, have frequently used the arguments that the city cannot hope to make the plant financially successful, and the ruinous competition will be damaging to both the company and the city. Records of the success of municipal competitive

plants disprove these statements.

One argument invariably used by private power companies is that they will retain the majority of their business for years, and that the city will be paying its bonds and interest on a losing venture. It is therefore of interest to observe how short a period has been required for a municipal plant to establish itself successfully.

New Consumers in Same Ratio as Vote

If a vote of the public has been two to one in favor of public ownership, then the consumers of the municipal plant should be in the same ratio. If a city carried its bond issue for a municipal plant by a ten-to-one vote, it would be somewhat of an indication that ten customers would go to the municipal plant as compared with one remaining with the company. These assumptions, however, have in most cases been theoretical, but we now have actual examples of how long a period has been required in a number of cities to establish themselves on an earning basis and acquire the light and power business.

It is interesting to note that the reductions in rates made by the municipalities shown in the accompanying chart have invariably been followed by reductions in rates by the private companies in their efforts to hold the business: but that the consumers have forsaken the companies and connected to the municipal plant just the same.

In some of the larger municipalities the business has not been purely competitive because of the division of territory or a working agreement made whereby the company would hold certain consumers and the city acquire other consumers. Such mutual agreements were entered into at Los Angeles and Seattle, to a certain extent. These agreements have even covered the joint use of poles in some places: so we do not have many records of what may be termed a "thoroughly competitive plant."

Of the several hundred competitive plants in operation, neither the company nor the city has kept very accurate records of the growth or loss of business by either the company or the city. In recent years, however, a number of cities have established good records that may be used as a criterion in other cities, indicating how long a time is required to establish a municipal plant on a paying basis.

Short Time for Successful Competition

Data and information in the way of the growth of the business, percentage of customers acquired by the municipalities, and time required, have been compiled for the cities of Muscatine, Iowa; Oberlin, Ohio; Modesto, Calif.; Piqua, Ohio, and Los Angeles. A study of the chart and its caption is of the utmost interest both to the municipalities and to the private companies. There are no unusual circumstances surrounding these communities that would make them different from any other community, and it is believed that the record of these cities is typical of what might be expected in the establishment of any competitive light and power plant.

What these cities have accomplished is possible with any other similar community, and if the voters of a community are predominantly in favor of a municipally owned plant, there can be no doubt of its success, if it is given even a fair degree of intelligent management. The record of these cities and others that have procured a large percentage of the light and power business should serve as a warning to the companies—that where public opinion registers itself in favor of municipal ownership there is a reasonable assurance that the plant will have its consumers in about the same proportion as public opinion is expressed in the bond elections.

These comments are not offered as any argument for establishing a competitive municipal plant except after all efforts of purchase or reduction of rates are exhausted. But when a municipality is forced to proceed with a municipal plant, there can be little doubt of its success—judging from the past records of other municipal installations.

Two National Health Conservation Contests

THE Board of Judges of the Sixth National Health Conservation Contest, conducted annually by the Chamber of Commerce of the United States in cooperation with the American Public Health Association, recently announced the winning cities in the 1934 Contest. The purpose of the Contest is to determine which cities throughout the country, in various population classes, are carrying on the most effective community health programs.

The winning and honorable mention cities in 1934 are:

500,000 population and over—BALTIMORE; honorable mention, Buffalo.
250,000-500,000—NEWARK, N. J.; honorable mention, Minneapolis, Toledo, Dallas.
100,000-250,000—HONOLULU; honorable mention, Hartford, Conn., Grand Rapids, Mich., Springfield, Mass., Duluth, Minn., Yonkers, N. Y., Reading, Pa., Utica, N. Y.
50,000-100,000—PASADENA, CALIF.; honorable mention, Kalamazoo, Mich., Schenectady, N. Y., Evanston, Ill., Waterbury, Conn., Sacramento, Calif., Binghamton, N. Y., San Jose, Calif., New Rochelle, N. Y., Greensboro, N. C.
20,000-50,000—HACKENSACK, N. J.; honorable mention, Watertown, N. Y., Pittsfield, Mass., Auburn, N. Y., Greenwich, Conn., Santa Barbara, Calif.
Under 20,000—PALO ALTO, CALIF.; honorable mention, Englewood, N. J., Cliffside Park, N. J., Hibbing, Minn., Miami Beach, Fla.

Special awards were granted to Brookline, Mass., Detroit, Milwaukee, New Haven, Conn., and Syracuse, N. Y., which have twice won first place in the Contest and which have maintained through 1934 their previous high standards of health achievement.

To stimulate an interest in rural health work comparable with the interest shown in the National City Health Conservation Contest, and in answer to an appeal from rural districts, the Chamber of Commerce of the United States, with the cooperation of the American Public Health Association, has just completed a country-wide contest for counties and districts having a full-time health service.

The winners and honorable mention counties or districts are:

Northeastern Division—tie between CATTARAUGUS, N. Y., and WESTCHESTER, N. Y.; honorable mention, Columbia County, N. Y., Barry County, Mich., Southern Berkshire District, Mass., Allegan County, Mich., and Eaton County, Mich.

Eastern Division—KENT COUNTY, MD.; honorable mention, Davidson County, Tenn., Ohio County, W. Va., Rutherford County, Tenn., Washington County, Md., Forsyth County, N. C., and Sullivan County, Tenn.

Southeastern Division—GLYNN COUNTY, GA.; honorable mention, Charleston County, S. C., Lauderdale County, Miss., Pike County, Miss., and Leon County, Fla.

North Central Division—WOODBURY COUNTY, IOWA; honorable mention, Lyon County, Kans.

South Central Division—EL PASO COUNTY, TEXAS.

Western Division—SAN JOAQUIN COUNTY, CALIF.; honorable mention, Los Angeles County, Calif., Santa Barbara County, Calif., Spokane County, Wash., and Yakima County, Wash.

The units are scored on water and milk supplies and their supervision, rural sanitation, school health work, vaccination and immunization, use of physicians, dentists and nurses, popular health education, and control of preventable diseases.

Preserving the Artesian Water Supply of Honolulu

Metering Prevented a Land of Plenty from Becoming a Land of Waste

MODERN Honolulu dates from the day on which, by means of water resources, it first became possible to grow grass. As a matter of history, that was in 1879, more than half a century ago, when James Campbell struck artesian water on the shores of Pearl River Lagoon, and made certain a safe city supply. After that, other wells were sunk and the city began to grow rapidly in a constantly accelerating tempo. To imagine what it had been is almost an impossible task today. One has to go back to records of living conditions as chronicled by the early whites. Lucy G. Thurston wrote in her "Life and Times" what they were in 1835 on the island of Hawaii.

She tells the facts and they need no embellishment: "One man every week goes up the mountain to do our washing. Frequently he finds water within two miles. Often he is obliged to go five, sometimes ten, miles. He likewise brings fresh water for the daily use of our family from like distances in large gourd shells, suspended at the two ends of a strong stick, the heavy weight resting on his shoulder. In like manner, a second man brings us brackish water from a distance of half a mile, to be used in household purposes."

Now—A Modern Supply

No turning-on the water tap in Honolulu, as life was lived in 1835. Today the picture is different. Modern American engineering has stepped in to make Honolulu, which has governmentally been a part of the United States since 1898, as advanced in her system of water development as any community of similar size within the continental borders of the nation.

By 1926, artesian wells had multiplied so rapidly and the draft on the artesian basin had grown so menacing that the city became gravely alarmed. For a number of years the head in flowing wells had been threatening and some wells had turned suddenly salty. The territory awoke to the situation. In 1929 the Legislature created a Board of Water Supply, to be free from politics.

Metering Prevented Waste

First among the new policies adopted by the Board was 100 per cent metering of the entire city, in line with the best municipal practice throughout the United States. That automatically operated to reduce what had grown to be a greatly excessive consumption. Simultaneously there became effective a legislative mandate that there should be no more free water for anybody. The Board was required to adopt rates which would make it self-supporting and to live strictly within its revenues.

From the proceeds of bond sales on which it paid all fixed charges, the Board built three new pumping stations, which, though modest and severe in design, were in conformity with the accepted standard of American cities, and not eyesores housed in shacks.

Pan-Pacific Press Bureau Photo

THIS PUMPING STATION WAS ERECTED AT A COST OF $25,000 BY THE BOARD OF WATER SUPPLY OF HONOLULU, T.H.

It is one of eight similar stations supplementing three central steam pumping stations

The result of metering was that consumption dropped, until it is now reasonable for a subtropical city, and operating expenses were greatly reduced. Leaking and abandoned artesian wells were sealed. The life and the yield of the artesian system was prolonged and increased. Honolulu now ranks with other American cities of the first class in the statistics of the National Board of Fire Underwriters. It has never had a case of typhoid fever charged against its water supply. Nature has provided a gigantic filter in the artesian cap rock. The city is entirely supplied by underground water, the greater part of it drawn from artesian wells, a small remainder from mountain springs and tunnels, but all filtered by nature.

Statistical Data

There are 247 miles of water mains in the Honolulu distribution system, the pipes varying from 4 inches to 30 inches in diameter. There are 18,461 services in this city of 141,976. The average daily consumption is over 40,000,000 gallons, a per capita consumption of between 350 and 400 gallons per day.

DAY AND NIGHT VIEWS OF THE CANAJOHARIE, N. Y., PLANT FOR THE TREATMENT OF SEWAGE AND THE INCINERATION OF GARBAGE

A Combined Wastes Disposal Plant

Garbage Incinerator and Sewage Treatment Plant Under One Roof

ON December 15, 1934, the village of Canajoharie, N. Y., the home of Beech-Nut products, became one of the few cities to operate a refuse incinerator and a sewage treatment plant as interdependent units under one roof. The two plants interchange heat values from flue gases of the incinerator, and generate heat from the gases of the digested sludge. The waste gases from the incinerator are used to heat water, which is pumped through the hot-water coils in the sewage sludge digestion tank, maintaining a temperature of about 82 degrees within the sludge. The digestion of the heated sludge produces gas, which is collected and returned to the incinerator to be burned as an auxiliary fuel, contributing to maintaining high temperatures in the incinerator. Sewage gas is also used in a gas-fired hot-water boiler for the general heating system of the plant.

In September, 1933, Canajoharie made application for a Federal loan and grant. The plans were prepared early in 1934 and contracts for the construction of the combined plant were let in May, 1935, and the work started that month. The completed work cost $55,000, including land, engineering and other miscellaneous expenses.

The Visible Structure

The brick structure is built over the old trunk sewer. The building measures 48 x 21 feet and has a 12 x 24-foot wing, which houses the pump room, suction well and office. The basement contains the stoking room for the incinerator, the incinerator corridor and the lower part of the sludge digestion tank.

The ground floor contains the charging floor of the incinerator, the large hot-water storage tank, the main corridor, the office and the upper part of the sludge tank. The sub-basement contains the screen room and suction well and pump room. The pump room floor is extended and becomes the floor of the sludge hoppers of the settling tank.

Sewage Treatment

Untreated sewage from the village has been discharged for many years into the Mohawk River. With the new plant in operation, this domestic sewage, with very little trade waste, flows by gravity through the trunk sewer to the plant, and after coarse screening is discharged into the pump well. Three Worthington 4-inch centrifugal pumps, each with a capacity of 375 gallons per minute, are used to lift the sewage from the trunk sewer to the settling basin. There are two settling tanks in parallel, each equipped with four multiple effluent headers for removing the supernatant liquids. These headers are located at the one-third and one-half points, and near the end of the tank, with a main header at the extreme end. Each effluent header discharges to a separate weir compartment in a control chamber at the end of the tanks.

At the present time, the header at the one-third point is not used. The header at the middle of the tank removes about 40 per cent of the supernatant liquors, and the end header removes the remaining 60 per cent. In this way the effective length of the tank is materially increased as the rate of flow of the sewage through the last half of the tank is reduced by the removal of 40 per cent of the clear settled liquor at the mid point.

The sludge is moved along the floor of the tanks by a Jeffrey sludge collector to the sludge hoppers adjacent to the building. This sludge is discharged into the covered sludge digestion tank, located within the building so that it is not exposed to the outside temperature. The tank, which is 15 feet in diameter and 22 feet high, is equipped with a Downes floating cover. The sludge is moved from the collecting hopper to the tanks by air ejectors. The temperature of the sludge hot-water coil is controlled by thermally operated mixing valves at the top and bottom taps to the tank, tapping the hottest and coolest water, so that, by mixing, water at a temperature of 135 degrees F. is delivered to the sludge coils. Thrush circulators are

inserted in the line to insure positive circulation of the water on all hot-water systems within the building.

An Arco heater and a gas-fired hot-water heater are installed in parallel with the hot-water coils within the incinerator, and all deliver to the hot-water storage tank to equalize the heat throughout a 24-hour period. This is necessary, since the incinerator is operated only five hours a day and not at all on Sundays. The hot water for heating the building is taken from the top of the storage tank.

The Incinerator

The incinerator, the exterior of which is constructed of salt-glazed brick, has two charging holes on the ground floor, two refractory hearths and one iron grate, and in its early operation developed 1400 degrees temperature in the combustion chamber. The first charging hole receives refuse, which burns readily, delivering it to the iron grate. The second charging hole receives wet refuse onto a sloping refractory hearth over which the hot gases pass on their way to the combustion chamber of the Morse-Boulger unit.

A 70-foot smokestack rises on the west side of the building. The stack contains terra cotta blocks with white enamel ground and black letters spelling out the name of the village. The stack is floodlighted at night.

City Collects Waste Oil

The entire plant is equipped with numerous control devices to facilitate operation, and embodies several principles that are comparatively new in sewage treatment plant design. As an example of the details which were considered when this plant was designed, the arrangement for the disposal of waste oil from garages and filling stations may be mentioned. In order to keep waste oil from being discharged into the sewer system, where it might cause trouble, the village arranges for the regular collection of this material. At the wastes disposal plant a special oil filter and filtered oil storage tank have been provided. The waste oil is now brought to the plant, filtered, and reclaimed for use as an auxiliary fuel, and later an oil burner may be installed to make more effective use of the fuel value.

Henry W. Taylor, consulting engineer, New York City, designed the plant, superintended its construction, and supervises its operation.

Sewage and Industrial Waste Problems Resulting from Population Concentration

By **F. W. WARING**
Chief Engineer, Ohio Department of Health

IT is apparent to any one that indiscriminate use of our streams for the disposal of untreated sewage and industrial wastes cannot go on indefinitely; that the protection of the public water supplies taken from our surface sources is not adequate forever merely by the construction of water purification works; and that there is such a thing as an undue load or burden upon modern water purification plants as a result of sewage and industrial wastes disposal into the surface waters used for water-supply purposes. It is unfortunate that we do not have the same incentive for sanitary disposal of wastes that we have for construction of water-purification works. There are a few notable exceptions where cities do have the incentive to protect their own water supplies by the construction of sewage and industrial wastes treatment works. Reference is made to Cleveland and a few other Lake Erie cities, and to Portsmouth (Sciotoville Section) on the Ohio River.

There are about 12,000 miles of streams in Ohio which may be said to contain running water all the year round. Present information indicates that about 400 miles of such streams constitute badly polluted zones. As a result, we find lawsuits taking place on the part of riparian owners downstream from the municipalities in the effort to protect their riparian rights and to protect the public health and comfort. Such situations have resulted in the construction of about 89 municipal sewage treatment plants serving approximately 2,700,000 people. Unfortunately, only about two-thirds of these municipal sewage treatment plants are giving what might be called satisfactory results. The failures noted have not been much due to types of plants, but almost entirely to lack of maintenance and proper operation of the devices constructed.

Funds for Treatment Plant Operation

As a result of the difficulties with municipal sewage treatment and disposal, largely attributable to failure of proper maintenance and operation of such plants, there is coming into rapid favor the use of the utility plan for maintaining and operating the sewerage and sewage disposal systems. The Ohio Sewer Rental Law, adopted in 1923, was a pioneer in its field of thought in attempting to fix sewer rental charges commensurate with the service rendered, in order that a sewer fund might be set up to take care of the system properly. At the present time there are about 31 municipalities operating their sewage works upon the utility plan, the largest of which is Dayton, and one of the smallest of which is Oxford. The history of putting the sewerage system upon a utility basis is following closely, say, within thirty years, the history of waterworks maintenance and operation.

Growth of Industrial Waste Problem

Industrial waste problems of particular note appear where a great preponderance of industry of the same type is set up; especially is this true in the municipalities of small character where the industrial wastes may overshadow the municipal sewage problem. A few examples

of such problems that have arisen because of municipal and industrial growth may be cited. The Mahoning Valley area, by reason of congestion of population and low stream flow and the location of extensive steel mill activities, exhibits an acid iron characteristic in the Mahoning River due to the pickling processes of steel mill operation. Of course this is true only during low flow conditions of the river and when steel industry is operating nearly full-time. Another outstanding example which is characteristic of the industry, and seemingly independent of concentration of population or volume of stream flow, is the development of the by-product coke industry which has taken place within the last seventeen years on the Ohio River and the Great Lakes watersheds. This industrial waste from the by-product processing of coal which caused trouble was phenol or crude carbolic acid, which was present in minute amounts but sufficient to embarrass water users hundreds of miles downstream from the sources of industrial wastes. Taste and odor characteristics of a highly objectionable nature were the damage created, the only remedy for which proved to be the elimination of the phenolic material in the industrial wastes. A third example lately to be considered seriously is the acid character of many inland streams and the main stream in the Ohio River watershed caused by drainage from abandoned, idle or worked-out portions of bituminous coal mines. Within the last year some 2,000 out of 15,000 of these abandoned mines have been sealed to eliminate the acid characteristic.

Corollary Effects on Community Growth

Ohio is essentially a manufacturing state at the present time. Our community growth, therefore, centers upon manufacturing. One of the most important requisites for modern-day manufacturing is an adequate supply of water of usable quality. The geographical location has played a great part in the development of some of our industrial centers; as, for example, the Cleveland and Youngstown districts, which are about half-way in location between iron ore and coal used in the manufacture of steel and allied products. Water supply in quantity is assured on the shore of Lake Erie, but water supply in quantity is not yet assured in the Mahoning Valley region. Industry tends to become localized, but if for any reason, such as lack of proper water supply, it cannot expand, then community growth in such locality will be stifled and industry will move to another location. Examples of such a trend may be cited in the steel industry by the recent development of large plants on the Great Lakes in the vicinity of Chicago, Detroit and Toledo.

Manufacturing also requires adequate sewage and waste disposal facilities, and in a manner not to complicate the water-supply problem. Unquestionably, location of industry in the future or expansion of existing industrial operations will depend more and more upon the two items of proper water supply and adequate sewage and waste disposal. Cities, therefore, will be expected to provide for these items in a reasonable manner, or the growth of these cities will suffer when industry moves to a more favorable location. Two outstanding points are being given consideration by industry in deciding the questions of location, expansion and relocation. Reference is made to hard water vs. soft water; and the necessity of augmenting natural stream flow by reservoirs to take care of cooling-water problems and economical waste disposal for industry. The Mahoning Valley is faced with these general considerations at the present time, and while soft water in quantity has been assured the Youngstown district by the recent Meander Creek water-supply development of the Mahoning Valley Sanitary District, adequate flow in the Mahoning River for cooling and industrial waste disposal purposes has not yet been effected.

Necessity for Comprehensive Planning

People of Ohio today are more mindful of the need for sanitary stream conservation than ever before. Evidence of this fact is reflected in the projects for local public works under the various kinds of Federal aid; during the past year about 70 per cent of all such public works projects have been in the interests of public sanitation. There has also been noted, however, a need of more careful planning in these recent attempts at municipal work projects along sanitation lines. Those municipalities where public works are now under way are noted to be those in which sufficient foresight was had to plan the works properly from the very beginning. Another evidence of lack of sufficient careful planning has been noted in the water-supply situations that have developed in a number of Ohio municipalities as a result of the drought conditions in 1930 and 1934. Many small municipalities were caught unprepared; existing works were found to be inadequate, and no planning had been accomplished so that immediate steps could be taken to avoid serious discomfort. Large cities are not entirely free from this criticism. Take the city of Columbus, for example; the O'Shaughnessey reservoir had hardly been finished when the 1930 drought came upon us, and if this structure had not been completed just when it was, a serious calamity would have taken place in this community. As a matter of fact, the year before the work was projected the water had been reduced in the old reservoir to less than twenty days' supply when copious rainfall replenished it. Another example of a major calamity averted was the Youngstown situation, when the Meander water-supply project was completed just ahead of the most recent drought conditions of 1934. In these water shortage situations of municipalities the safety of the community has been jeopardized through inadequate fire protection.

Managers of industry are looking ahead when it comes to deciding upon the vital questions of location, expansion or relocation of their industrial enterprises. Municipalities that are found delinquent in proper planning of water-supply facilities in the broader sense, which includes sewage and industrial waste disposal, will suffer.

Conclusion

One cannot help but draw the conclusion that careful planning into the future must be a routine accomplishment, whether it be water works, sewerage or other municipal type of improvement, if the municipality is to be in a position to take the fullest advantage of all opportunities. To the engineer, planning is almost a sixth sense, but it takes considerable urging on the part of those informed to get many public officials to see far enough into the future to properly appraise the value of careful engineering planning of public structures. The sometimes frequent shifting of administrative personnel, of course, offers difficulty; nevertheless it is possible to plan public works comprehensively, and revise as necessary.

ACKNOWLEDGMENT.—From a paper read before the Ohio State Planning Conference.

Iron and Manganese Removal at Lincoln, Nebraska

By D. L. ERICKSON
City Engineer

THE discovery of manganese in the ground water of the Platte River Valley near Ashland in 1933 was the first known occurrence of manganese in waters in Nebraska in sufficient amount to become seriously objectionable. The amount of manganese that may be tolerated is very small, most authorities considering anything over one-tenth of one part per million as objectionable.

History of Ashland Supply

Prior to 1932, Lincoln's water supply was obtained from 32 wells, divided into four groups—all located within the city limits, each having a capacity of approximately ½-million gallons per day. The records of ground water levels showed that in the 20-year period from 1910 to 1930, the ground water level was receding at the rate of 2 feet per year, and in the year 1930 the recession amounted to 5 feet. In the same year, the four wells in the 31st and X street group became so salty that their use had to be discontinued.

In the spring of 1931, the voters approved a bond issue in the sum of $2,300,000 for the purpose of developing an additional supply of water from the Platte River Valley near Ashland.

Five wells were then constructed in the Platte River Valley approximately 3 miles northeast of the town of Ashland. These wells are 2,000 feet apart in a direct north-and-south line, the distance from the Platte River varying from approximately ¼-mile at the extreme north well to ¾-mile at the extreme south well. The depth of the wells varies from 47 to 86 feet, all going down to the white limestone valley floor.

The soil formation in all five wells is practically the same, consisting of a mixture of sand and gravel below a top soil, 12 to 18 inches deep. The ground water table is quite high, 4 to 6 feet below the surface of the ground.

Each well is equipped with a deep-well pump having a capacity of 2½ million gallons per day. These pump into a 36-inch pipe line, which discharges into a 3-million-gallon reservoir, located approximately 2½ miles from the nearest well.

At this reservoir there is a pumping station with two centrifugal pump units—one 6-million-gallon-per-day and one 9-million-gallon-per-day—which pump into a 36-inch cast iron pipe line, 25 miles long, that delivers the water to Lincoln.

At the Lincoln end of the pipe line, the water discharges into a group of covered concrete suction reservoirs, totaling 34 million gallons in capacity, from which the water is then re-pumped into the water distribution system by means of four pumping stations in different parts of the city.

The new Ashland water supply was completed in July, 1932, at a cost of approximately $1,800,000, and was put into service in August, 1932. This supply was used continuously for a period of a year with entirely satisfactory results; in fact, the Ashland water was favored for use by the consumers, being somewhat softer than the local Lincoln water.

Sudden Appearance of Manganese

In September, 1933, over night, the tap water became turbid, having the appearance of having had black ink mixed with the water. The water did not have a bad odor or taste but looked bad. An investigation disclosed a 6-inch layer of sludge or deposit on the bottom of all the Lincoln reservoirs, and the water in the Ashland reservoir was found to contain rust-colored thread-like particles suspended in the water. A gelatinous coating was found on the inside of the 25-mile, 36-inch pipe line, which was brownish red in color at the Ashland end of the pipe line and black at the Lincoln end. Chemical analyses of this gelatinous coating disclosed that it contained high percentages of manganese.

The use of the Ashland supply was discontinued for a few days, while all the reservoirs were cleaned, and the entire 25 miles of 36-inch pipe line was thoroughly flushed through the blow-offs provided at all low points in the pipe line. After a thorough cleaning of all structures in this manner, the Ashland supply was again put into service; and since that time it has been possible to use this supply by systematic flushing of the 36-inch pipe line every three weeks.

Design for Manganese Removal Plant

For forty years or more, the Water Department of the city of Lincoln has been operating under a water rate having a maximum of 15 cents per 1,000 gallons. With the fixed charges incurred by the new Ashland water system, this rate does not produce enough revenue to permit the consideration of the increased operating cost connected with water softening. It was not deemed advisable under the present general economic conditions to attempt to raise the water rates.

It was therefore decided that the present operation of the plant should be limited to the removal of iron and manganese, but that the plant should be capable of being converted into a complete water-softening plant by the addition of the necessary chemical feeding equipment. Inasmuch as the present Ashland water project is designed for a capacity of 12 million gallons per day, with provisions for increasing to 18 million gallons per day, it was decided that the iron and manganese removal plant should be designed for these same capacities.

The final plant was to comprise the following processes:

1. Aeration
2. Chlorination
3. Upward flow contact filtration
4. Two-hour sedimentation
5. Rapid sand filtration

The experimental filter plant indicated that better results might be obtained without the two-hour sedimentation; but it was decided to build the sedimentation basin

for future water-softening processes, and as an additional safeguard for the present operation, with the plant so arranged that the sedimentation basins could be by-passed.

The Aerator

The aerator design is similar to that used at Memphis, Tenn., consisting of three units of four trays each, with a 24-inch riser pipe supply in the center of each unit. The bottom of the trays is made of 2-inch slate, drilled with 1 1/16-inch holes spaced 6 inches center to center. Four inches of coke is to be placed in each tray.

The aerator is designed to operate at the rate of 28 gallons per square foot per minute at 12 million gallons per day, or 42 gallons per square foot per minute at 18 mgd.

Contact Filters

The contact filters are to be of the upward flow type, operating at the rate of 8 gallons per square foot per minute. There are to be two units. With the exception of the direction of flow and the filter media, the contact filters are of the same general construction as the final sand filters, so that whenever it is desired to go to complete water softening, the two contact filters can be converted into standard final sand filters by lowering the wash-water troughs and making some minor piping changes to reverse the direction of flow. Provision is made for backwashing as in the standard sand filters.

The filter media in the contact filters is to be either pyrolusite (manganese ore), coke or gravel. The decision on this point is being deferred, pending more definite results from the experimental filter plant which is to be kept in operation during the construction of the plant.

Sedimentation

The sedimentation basin will have a capacity of one million gallons. It will be a rectangular, covered, reinforced concrete basin, divided into two parts by a central wall. The water will enter through a baffle wall and pass slowly through the length of one-half of the basin, and back to the plant, passing over a weir at the outlet end of the basin.

Final Filters

The final filters are of the rapid sand filtration type, there being four units. Each unit has a capacity of 3 million gallons per day, operating at a rate of 4 gallons per square foot per minute. The underdrain system of these filters consists of a series of 4-inch cast iron pipe laterals connected with a central concrete box. The cast iron laterals have a series of 3/8-inch holes drilled 6 inches on centers. The filter media consist of 18 inches of graded gravel, on top of which is placed 2 feet of carefully graded sand.

The wash-water troughs are made of concrete.

A clear well of 100,000 gallons capacity is provided underneath two of the final sand filters. Two electrically driven centrifugal pumping units are provided, one 7½ million gallons per day, and one 11 million gallons per day, which will pump the filtered water from the clear well to the existing 3-million-gallon reservoir.

With the exception of the sedimentation basin, the entire new plant will be housed in a fireproof stone-faced structure, immediately adjacent to the existing pumping station. Contracts for the entire plant have been awarded at a total cost of approximately $211,000, and the plant is now under construction with the expectation of its being completed by May 15, 1935.

The plans and specifications for the iron and manganese removal plant were prepared by Black and Veatch, consulting engineers, at Kansas City; and the plant is being constructed under the direct supervision of the writer; all under the direction of Paul W. Doerr, Superintendent of the Water and Light Department.

ACKNOWLEDGMENT.—From a paper read before the Missouri Valley Section of the American Water Works Association.

Annual Rental vs. Sales Value as a Basis for Real Estate Taxation

IN 1830 Delaware enacted a law allowing school districts to levy a tax upon the "clear rental value of all the real estate." This law was not repealed until 1917. M. M. Daugherty, of the Agricultural Experiment Station of the University of Delaware, discusses Delaware's 87 years of experience with this law in the February, 1935, issue of the National Tax Association Bulletin. "If there is any taxation scheme which engenders more trouble, yields less revenue, and is more regressive than the taxation of property on its annual rental value, Delawareans do not know what it is," concludes Mr. Daugherty.

Dean C. A. McCue of the University of Delaware, who was on the local school board that had jurisdiction over the assessment of property, is quoted as saying: "Farm lands were difficult to assess because there were no cases of cash rent in the district. The prevailing type of rental contract was on shares, and the part the landowner received varied markedly in accordance with the weather and the price of farm products. The best that could be done was to assess at a value which would not cause too much protest. . . . Building lots not in use were assessed as cow pasture, but valued so that at the local rate the owner would pay a nominal tax per year, because the owner would not kick at the modest tax.

"Take as a typical case a lot about 150 feet x 200 feet at the corner of Delaware Avenue and Orchard Road. This lot never had a house on it. It was one of the most desirable residential building sites in town. But its actual rental value with no improvements was nothing at all. Another vacant lot across the street, not nearly so large or well located, was assessed at the same figure. Neither could be rented without improvements. When improvements were erected, then the whole ensemble was rentable, and rentable on the basis of both house and lot. The practical effect of this was to deter building, for the whole tax, in effect, fell on the house. . . . A manufacturing plant was an additional source of difficulty because there was absolutely no basis upon which its rental value could be ascertained. . . . The assessment on a rental basis caused very much more dissatisfaction than the assessment of the same properties on sale value. Equality of assessment was generally considered to be very much more nearly achieved on the sale value basis. When the law was finally repealed in 1917, there was a general sigh of relief."

Installation of a Large Equalizing Culvert at Holland, Massachusetts

By F. E. AHERNE
Resident Engineer,
Massachusetts Department of Public Works

THIS past season a 150-inch diameter full-round multi-plate assembly was installed as an equalizer for the Hamilton reservoir at Holland, Mass. The installation is of particular interest because of its size and the simplicity with which it solved an otherwise complicated problem of design and construction.

The picturesque valley of the Hamilton reservoir is typical of Holland's wealth of scenery. On the matter of funds available for road construction, however, Holland is no more fortunate than the average small rural community. Consequently, the urge to get relief from the muddy conditions common to rural roadways at certain seasons of the year demanded that expenditures for road purposes achieve a maximum length of adequate road surface.

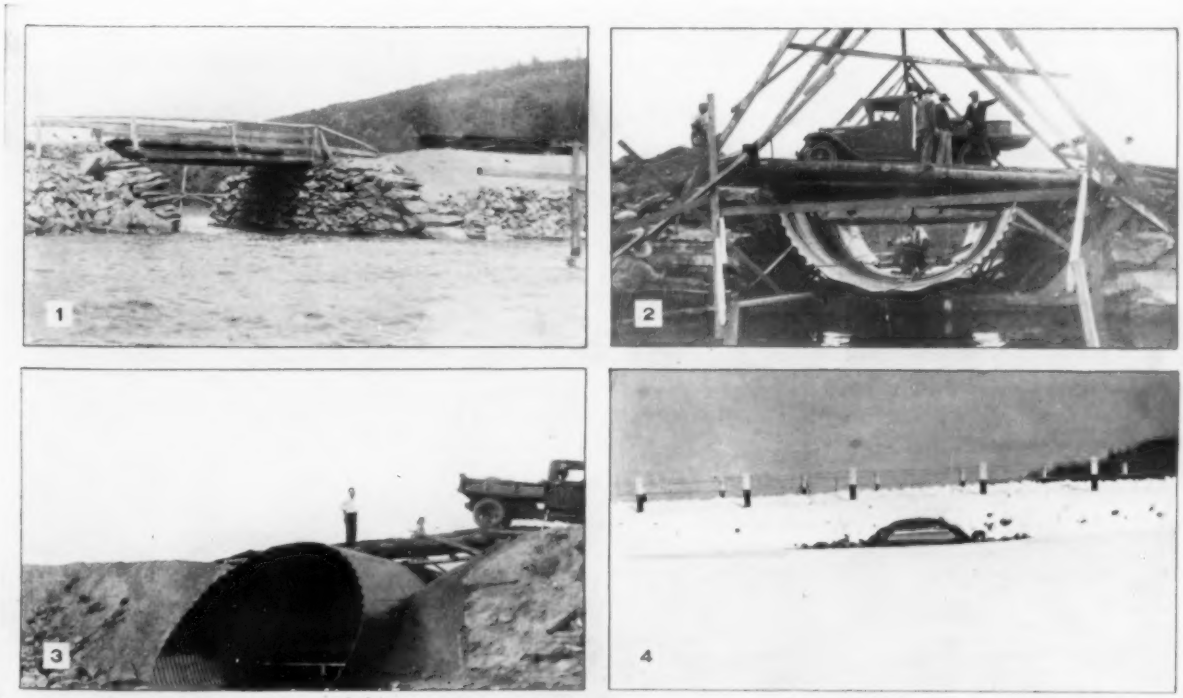
Costs Checked Road Program

The annual program of constructing a section of surface along the Mashapaug Road had reached to the westerly end of the Hamilton reservoir during the season of 1933. At this point, the roadway is continued by means of a causeway which divides the reservoir. An antiquated wooden span permitted the flow from the south side of the causeway to the northerly area where the Hamilton Woolen Mill draws water for power purposes.

Soundings revealed that $6,000 would be needed for the construction of a steel stringer span with concrete abutments of proper design. This would have dissipated the major portion of the $8,200 allotted by the state, county and town. The installation of a 150-inch diameter Armco Multi-Plate pipe was suggested and approved when a study of costs and conditions by C. W. Sterl, Division Project Engineer, acting under the direction of District Engineer J. A. Johnston of the Massachusetts Department of Public Works, showed a possible saving of about $3,000 in favor of this type of structure. This saving was used to extend the length of road construction.

Erecting the Structure

Local labor under the direction of C. M. Piazzo, Superintendent of Streets in Holland, proceeded with the work by constructing a staging over the 4- to 7-foot depth of water, under the old span and between the old stone abutments, which were not disturbed. After the initial coat of asphaltic paint, the galvanized corrugated plates



REPLACING AN OLD BRIDGE WITH AN ECONOMICAL CULVERT
1. The old bridge. 2. The lower half of the assembly ready for the second coat of paint and lowering to grade. 3. The assembly complete, ready for the gravel backfill. 4. The completed structure, with the roadway in place

were raised and swung into position by an overhead trolley carrier arranged longitudinally with the line of pipe.

The lower half of the assembly was first completed and then trussed and tied at four points to chain falls lashed to spanning tree logs. After the application of a second coat of asphaltic paint and the removal of the staging, the unit was lowered to the desired grade, and held in position until the load automatically transferred to a foundation formed by gravel which was fed into the water surrounding the unit. When work on the upper portion was nearly complete, the old wooden span was removed and the entire assembly completed. Gravel fed from small trucks into the area surrounding the completed unit rapidly restored the roadway to traffic.

The advantage of this type of installation was not confined to the additional length of paved road made possible by the saving; the old wooden span was left in position for traffic until practically the entire assembly was completed.

Sludge Digestion and Utilization of Gas

By **L. R. HOWSON**
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Engineers, Chicago, Ill.

THE standard practice in the provision of facilities for the digestion of sludge includes heated tanks having either fixed or floating covers with heat furnished by hot water circulated through coils. This method of heating has been found more efficient than the direct addition of hot water. The accumulation of data from plant operations indicates that there is a considerable range in optimum digestion temperatures, and that any temperature from 80 degrees to somewhat above 100 degrees F. may be considered as within the range of ideal digestion temperatures for most solids. Within this range there is apparently little variation in the character of the sludge produced, the rate at which digestion occurs, the amount of gas produced, or the character of the gas.

The Yield of Gas

It is interesting to note the reasonably close relationship between the data from various plants treating wastes not too greatly complicated by industrial processes. A yield of from 11 to 12 cubic feet of gas may ordinarily be expected from each pound of volatile matter in the sludge added to the digester. Where adequate digestion capacity is provided, from 20 to 23 cubic feet of gas may usually be secured from each pound of volatile matter destroyed in the digestion process. As the gas normally contains from 600 to 700 B.T.U., the efficiency of the gas collection process in collecting from 12,000 to 14,000 B.T.U. per pound of volatile matter destroyed, is apparent.

Use of Sewage Gas

Marked advance has been made in the utilization of sewage gas during the past two years. This is perhaps best illustrated by the Springfield, Ill., plant where much pioneer work has been done along this line. The Springfield plant is a separate sludge digestion activated sludge plant treating a typical domestic sewage from approximately 70,000 people and with a normal yield of gas of approximately 0.6-cubic foot per capita per day. The original installation of blowers at Springfield included two motor-driven units. In the first few months electricity was the only motor power used for the compressors. Subsequently, a 180-hp gas engine was installed on one of the blowers, and this unit was operated almost continuously during 1933 and 1934. During 1933 the gas engine produced about 65 per cent of the power required for aeration, and in some months exceeded 90 per cent. The installation of this unit reduced the power consumption by one-half and it is understood that after an operating period of about two years the saving has been sufficient to completely cover the cost of installation.

This installation was made without detriment to the heating of the digesters. The exhaust gas from the engine and the engine cooling water are used to heat the water circulated through the digesters to maintain the temperature. It has been found practicable to maintain the heat in the digesters from these by-products of the gas engine at a temperature varying from 80 degrees to 100 degrees F.

Other plants, notably those at Rockville Center, Long Island, N. Y., Newark, N. Y., Fort Atkinson, Janesville and Madison, Wis., Cedar Rapids, Iowa, Peoria, Ill., and others have units now installed or in the process of installation for the utilization of digester gas in engines. With the installation of gas engines and a fuller utilization of the available gas, more consideration is being given to the storage of gas in holders to iron out variations in either the supply from the digesters or the demand.

Gas is being used in a number of installations, such as Erie and Lancaster, Pa., Aurora and Rockford, Ill., and elsewhere, for the incineration of screenings and scum; also for operating auxiliaries driven by small gas engines, for laboratory use, and in at least one case for operating the laboratory refrigerator of the gas type.

ACKNOWLEDGMENT.—From a paper presented before the International Association of Public Works Officials.

Preparing Plans and Inducing Action

The conception of planning in its larger and more comprehensive aspects is relatively new in American thought. If we believe that it has a rôle to play in the rehabilitation of economic life and promoting the efficient use of our natural endowment, then we must desire to see it presented to public authorities and citizens in the best light—in a way to induce action. There is great danger that enormous documents based on the conception but neglecting the logic and psychology of presentation may confuse the public, fail to educate those who need education, and in time make the term "planning" a synonym for moonshine.

Planning is a noble conception. Capacity to make plans calling for deliberate adjustments to new circumstances seems to be one of the chief distinctions between man and the lower animals. Certainly it is a capacity absolutely requisite to the functioning of a great technological society. If it is to be kept alive and developed, then more consideration must be given to its underlying problematic assumptions, and to popular presentation and exposition.

—From "Capacity to Make Plans," by Charles A. Beard, in *Plan Age*, for March, 1935.

Financing Local Improvements by Revenue Bonds

WHEN the West Virginia Legislature recently passed House Bill No. 165, it completed legislation which now enables the municipalities of that state to "establish, construct, acquire, extend, own, operate, equip, maintain and improve" almost any conceivable type of public improvement which is self-liquidating. The bill authorizes the financing of these improvements by means of revenue bonds, which "shall not in any respect be a corporate indebtedness of such municipality."

Prior to 1932 only three states had legislation providing for the issuance of revenue bonds. Since then thirty states have adopted laws which provide for construction and operation of sewerage and water-supply systems to be financed by service rental charges, more commonly known as revenue bond acts. The following states have such legislation: Alabama, Arizona, Arkansas, California, Connecticut, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Michigan, Mississippi, Montana, Nebraska, New Hampshire, New Jersey, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, South Carolina, Tennessee, Texas, Utah, Vermont, Virginia, West Virginia and Wisconsin.

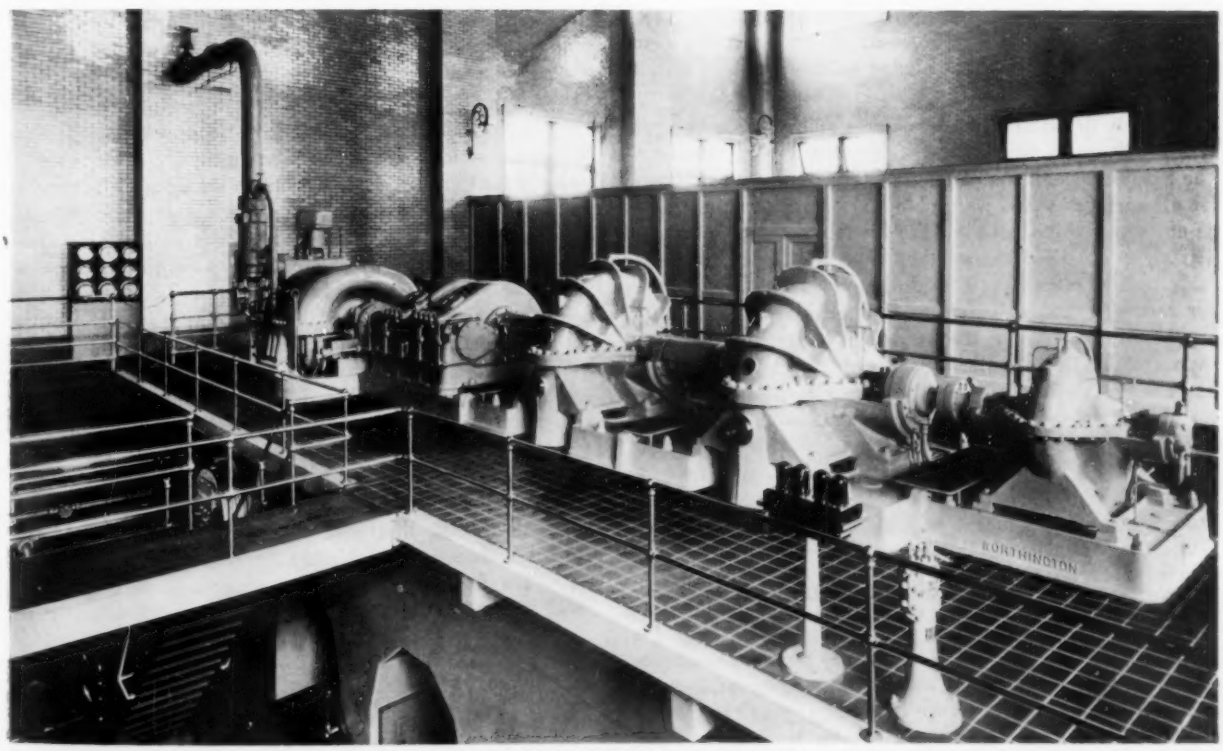
Since West Virginia had laws providing for construction of sanitary and water-supply needs by means of revenue bonds, these were not included in the present bill. The new bill lists the following specific municipal works: "Cemeteries, incinerator plants, hospitals, piers, docks, terminals, airports, drainage systems, flood-control systems, public markets, stadiums, public recreation parks, swimming pools, tennis courts, golf courses, polo grounds, public buildings, including libraries and museums, common jails, paving and/or pavement, and/or repaving streets and alleys, where such works or projects will be made self-supporting and the construction and/or acquisition costs thereon, together with interest thereon, will be returned within a reasonable period not exceeding 30 years, by means of tolls, fees, rents or charges other than taxation."

Coming at a time when the largest public works program in the history of the world is being initiated, West Virginia municipalities are in an excellent position to win maximum possibilities from this legislation.

The excellence of revenue bonds as an investment security has been well demonstrated during the last three years. Many PWA projects have been carried out on this basis, and those revenue bonds which have been offered for sale by PWA have brought a premium in the market.

With the vast amount of public works which are needed, it behooves every community to take stock of its needs and consider the possibility of financing those needs by means of revenue bonds.

The New 25,000,000-Gallon Steam Turbine Centrifugal Pump on the Eastern Hills Service, Cincinnati, Ohio



This centrifugal unit built by the Worthington Pump & Machinery Corporation, and the General Electric Co., was operated daily from April 1 to November, 1934, delivering approximately 40 per cent of the total pumpage for the district served. The discharge pressure varies from 195 to 210 pounds, and the operating steam pressure is 160 pounds with 100 degrees F. superheat. The steam turbine operates at 3,960 rpm and the pump at 740 rpm. The 13-stage steam turbine is rated at 2,500 horsepower. The test duty of the unit was 192,808,950 foot-pounds per 1,000 pounds of superheated steam at rated capacity

Producing Non-Skid Asphalt Surfaces

By B. E. GRAY
Chief Highway Engineer, The Asphalt Institute

SKIDDING accounts for only about five per cent of motor vehicle accidents, but even with this small percentage it was the major cause of 1,740 deaths and 41,510 accidents during 1931, the year which registered the peak in accidents on highways. Even the threat of skidding produces a feeling of uneasiness and discomfort although no accidents result, and the psychology of the motorist when operating his car under conditions which appear dangerous is one of great uncertainty which in itself many contribute to accidents for others. Many accidents resulting from skidding are due to careless driving, such as failure to slow down on curves, and excessive use of the brakes, while others occur during fall, winter and spring because of snow and ice or because of films of wet leaves or soft mud on the pavement. For these conditions there is little remedy except the exercise of greater care by the driver.

The highway engineer, however, is directly concerned with providing a pavement which is in the highest degree resistant to skidding so far as the cross-section and surface texture are concerned. This necessitates thorough tests on all types of pavement, to the end that a character of surface shall be selected with the safety of traffic as a primary consideration. Last year Professor R. A. Moyer of Iowa State College submitted a very comprehensive report on the skidding characteristics of various types of surface, and much valuable information has become available. Further studies by Professor Moyer and others are being made to increase knowledge on this subject; a first need when the engineer is making changes in design.

Probably the most striking features of Professor Moyer's first report were the results of tests on asphalt surfaces. The highest coefficients of friction (resistance to skidding) for all surfaces tested were obtained on high-type asphaltic surfaces. Also, some of the lowest coefficients of friction were obtained on another type of asphalt surface. Such results clearly indicated that it is not the asphalt *per se* which makes for either a non-skid road or a slippery road, but rather the way it is employed. It was apparent that the "sandpaper" finish on certain surfaces was largely responsible for their high resistance to skidding. There was also a definite indication that the hardness of the asphalt cement had some influence in making for these high coefficients. It is therefore in the field of design, as well as in the construction and maintenance procedure, that the means of obtaining utmost resistance to skidding is to be obtained.

Modern Asphalt Surfaces

Over the years there have been gradually developed a variety of types calculated to meet every possible condition of traffic, every kind of available aggregate and every financial limitation. They are listed in approximate order of cost and increasing ability to take traffic: (a) dust layers; (b) surface treatments; (c) road-mix surfaces; (d) plant-mix surfaces; (e) penetration macadam; (f) block pavements.

In general, surfaces having the most non-skid texture also have the greatest stability and durability, so that all improvements in technique to achieve the latter qualities produce the non-skid texture as a matter of course.

The first classification is of rather minor importance because the application of dust layer material is usually in small amount, so that the original texture of the surface is unchanged.

Surface Treatments

There are approximately 40,000 miles of surface-treated roads on the state highway systems alone, and this mileage undoubtedly will be doubled and tripled within the next few years as a result of the very considerable mileage of gravel and other selected material surfacings which have been constructed in recent years.

Prior to Professor Moyer's report there was a marked tendency toward the use of large-sized aggregate for cover coat with view to obtaining a coarse open surface texture. It is not these coarse fragments, however, that insure non-skid textures, but rather the correct relationship of asphalt cement to aggregate, and marked economies may be obtained by giving greater attention to this fact and the selection of the appropriate grade of asphaltic material. In original treatments, the first step is to prime the surface in such a way that the mat subsequently formed will not only be thoroughly knit together, but also that instead of simply a layer of bituminous material dotted with aggregate, there shall be an actual impregnation of the road surface.

Probably the greatest error in re-treatment work is the use of too much material per square yard. There is a tendency on the part of engineers to set up a re-treatment program for the year, establish a certain rate of application, and then make this rate regardless of the road condition. The procedure is defended on the ground that it makes for less confusion in carrying on the work, and the use of a single size aggregate for cover coat. However, the lesser cost and the non-skid surface texture obtainable would indicate a needed change in such procedure. Unless it is desired to add a definitely increased thickness to the surface, re-treatment should merely provide for a reseal of the surface against moisture, and the formation of a granular or so-called sandpaper texture. If the surface is practically intact except for slight checking, then the least amount that will cover the surface should be applied with an appropriately sized aggregate for cover coat. The following table shows approximately the relationship of rates and size of aggregate.

Gallons Per Square Yard	Size of Aggregate	Pounds Per Square Yard
0.1	1/8" x 1/4"	10
0.2	1/4" x 3/8"	20
0.3	3/8" x 1/2"	30
0.4	1/2" x 3/4"	45
0.5	5/8" x 1"	55

Note. Exact grading limits will of course extend both above and below those given above, but the nearest commercial size should be selected so that approximately 75% of particles will be within above limits.

Road-Mix Surfaces

Road-mix surfaces, while of recent development, constitute a rapidly increasing mileage, not only as entirely new surfaces, but also as a means of salvage for old pavements or as a method for removing excess crown and surface irregularities. There are two distinct varieties: (1) macadam aggregate type, where the smallest particle is retained on a ¼-inch screen; and (2) the dense graded aggregate type, where as much as 70 per cent *passes* a ¼-inch screen. The first type is used principally as a resurfacing and salvage medium over old pavements, while the second is employed over either natural soil subgrades or sandy gravel surfaces.

The early work was an outgrowth of surface treatment procedure, with extra-heavy applications of bitumen and cover, and with the fault of a non-uniform rate of aggregate with a uniform rate of asphalt, so that very spotty surfaces resulted. Much of the discussion in regard to the amount of asphalt to be used in macadam aggregate road-mix arises from failure to provide this uniform rate of coating on the stone. For example, if an old road is being reconstructed with a view to taking out excess crown, as well as irregularities, and the average amount of stone is 160 pounds per square yard, the stone often will be spread in such a manner as to be nearly four inches thick at the edge, and less than one inch at the center. When followed by the distributor application of the liquid asphalt at a uniform rate, no amount of subsequent mixing will produce as heavy a film around the stone particles in the lower outside layer as will be on the center stone, and the chances are that the surface will be fat in the center and ravel at the edge. The correct procedure is to spread the stone at a uniform rate per square yard regardless of contour, apply asphalt and make the mixture, and then spread the mix to produce the desired cross-section. Some very excellent new equipment has been developed in the State Division shop at Chillicothe, Ohio, and work accomplished this past summer shows the value of attention in this respect, not only as to uniform non-skid texture, but with less inconvenience to traffic and a lower cost as well.

In addition to the need for using an appropriate grade of asphalt, is the question of proportion. Too much emphasis can hardly be placed upon the use of the simple laboratory tests which will indicate the correct percentages of material to be used so as to obtain the utmost strength from a given aggregate, and which also insures the maintenance of a non-skid surface. These methods have been set forth in reports of the Bureau of Public Roads and The Asphalt Institute and will not be gone into here, but suffice it to say that by following recommended procedure, non-skid surfaces as constructed will stay that way.

Plant-Mix Surfaces

The first essential in plant control is the prevention of segregation of the different sizes of aggregate. The specifications should provide for mechanical feeding of aggregates in appropriate proportions and with screening devices to obtain complete segregation, with subsequent storage in bins so constructed that overflow from one to another is impossible. Having separated the aggregates into the proper sizes, re-combination to make the total amount in the mix is then required, and the use of spring balances or single beam balances is not in accord with the exact procedure which should accompany modern mechanical methods. When the beam type is used, there should be a separate beam with tell-type indicator for each size aggregate, and a tare beam for balancing the hopper, so that there is assurance of exact proportions.

In many old plants, the weighing of the asphalt is done in a very crude manner with wide variation between batches. All these variations may be overcome by providing that the bucket shall be either steam-jacketed or electrically insulated, as well as the pipe lines which lead to it, and that either dial or beam scales be used so that the tare weight of the bucket and the net weight of the asphalt are exactly shown for each batch. Scales for aggregate should be sensitive to one-half per cent of maximum load required, while for the asphalt they should measure accurately within one per cent above or below the weight required.

The proper amount of asphalt and aggregate in the batch being assured, the next step is to obtain proper mixing of the two materials. This may be accomplished by providing that the mixer box be of proper construction, so that it will not leak during mixing, and will dump the mix without segregation at completion. Furthermore, it should be equipped with a time lock to insure accurate control of the mixing cycle. Hand raking and spreading are used in many cases, particularly for city construction, but mechanical finishing is replacing hand methods and is to be encouraged, for there is no comparison in the quality of the work obtained by the two methods. However, it is not the hand raking that causes non-uniform surfaces but rather the non-uniform manufacture, and if the plant requirements as above outlined are insisted upon, little difficulty will be found in obtaining a uniform granular surface.

One desirable item in connection with sheet asphalt specifications is the elimination of the requirement for an application of dust over the compacted wearing course. It serves no useful purpose and materially reduces the natural non-skid characteristics of the mixture. Furthermore, this application often is made to cover up poor work before final inspection, which is an additional reason for its elimination.

In addition to obtaining a highly non-skid surface by following careful methods of construction, additional non-skid characteristics may be obtained by placing a light seal coat. This consists of a hot, precoated aggregate broadcast over the surface after the initial rolling, and imbedded under the final rolling. The rate of application is from 8 to 10 pounds per square yard, size of aggregate ¼- to ¾-inch, the asphalt coating from 1½ to 2 per cent, applied at a temperature of not less than 275 degrees F.

Penetration Macadam

This type is one of the oldest varieties of bituminous pavement, and was universally constructed as a high type pavement on rural roads around 1910 to 1915. Originating in the northeastern states, where very hard stone was available as well as a good construction technique, the type was later adopted in other sections where sometimes, because of the lack of one or both qualities, very inferior work was obtained. It is fundamental to good results that the stone be of a quality and be so placed that the voids between the stone particles will be uniformly open, so that a given rate of application of asphalt will be uniformly absorbed. If the stone is soft, these voids will be non-uniform after rolling, and fat spots will be certain to

develop. For such aggregates a different type of surface should be designed.

As developed in Massachusetts, the surface not only is non-skid under summer temperatures but, because of the slight valley between stone particles, gives considerable tractive resistance even under heavy ice and sleet storms.

Block Pavements

Asphalt block pavements are constructed for very heavy-duty service, such as terminal areas, docks, industrial streets, or arterial highways. The blocks are formed under 3,000 to 4,000 pounds per square inch pressure from a special sand asphalt mixture. The early pavements were laid with sand-filled joints, which gave all necessary tractive resistance but, with the advent of fast motor traffic, it became necessary to fill the joints with a more durable binder, and emulsified asphalt and sand are used today for this purpose. Coupled with the sand texture of the block face there is provided a non-skid texture for ordinary grades. In recent years asphalt block pavements have been constructed on very heavy grades by reason of an unusually high tractive resistance obtained from a new manner of placing the block. This procedure in brief is as follows: First, the blocks are placed in transverse courses with wooden spacers, approximately ⅜-inch wide between. Ordinary building lath are satisfactory. After the street has been laid, the spacers are removed and filled with portland cement grout. About thirty minutes later, when the grout has taken its initial set, the joints are raked to a depth of ½-inch, which leaves a recess ½-inch wide and ½-inch deep between the rows of blocks. This type has been very successful on the heavy grades leading from the Hudson River in New York City.

Conclusion

The study of traffic behavior on asphalt surfaces indicates definitely that with few exceptions it is the correct relationship between aggregates and asphalt *cement* that is the controlling factor in respect to non-skid characteristics. This correct relationship is obtained when the finished pavement is composed of individual aggregate particles exposed to traffic, yet firmly bound together below the exposed surface by the asphalt cement in such a manner that no surplus of asphalt reaches the surface under the yearly temperature changes.

Tests have indicated that the so-called "sandpaper" surface texture has the highest coefficient of friction, and therefore this kind of surface should be constructed wherever rain alone is the worst weather condition to be met. In many sections, however, where snow and ice are found for considerable periods, or even in warmer areas, but where clay mud is tracked upon the pavement, it is a distinct advantage to have a surface of somewhat rougher texture. The design of any given surface therefore may be a compromise between the ideal determined for clean wet pavements and that best adapted for surfaces that are expected to accumulate extraneous material which in itself would produce a slippery road. It is for this reason that the larger sizes of aggregate cover have been recommended in this paper.

ACKNOWLEDGMENT.—From a paper presented before the Highway Research Board at the 1934 annual meeting.

Eminent Domain for Clearing Slums and Building Low-Cost Housing Upheld

By **IRA S. ROBBINS**
Counsel, New York Board of Housing

IN an important decision handed down by Justice Charles B. McLaughlin on April 12, 1935, in the case of *New York City Housing Authority v. Muller, et al*, the New York Supreme Court upheld the power of the state and its instrumentalities to acquire land in eminent domain proceedings for clearing slums and building low-cost housing.

The constitution of New York State, like that of practically every other state, prohibits condemnation proceedings except where the property is taken for "public use." The contention of the defendants that the property was being taken for a private use and that the law was discriminatory class legislation was overruled by the Court.

Of particular significance is the determination of the Court to follow the so-called liberal interpretation of the phrase "public use." The courts have never been able to formulate a satisfactory or comprehensive definition of that phrase. The decisions present two sharply divergent points of view. The narrow view usually requires that the object for which the property is to be taken must be one which the public is entitled to use as a matter of right, such as parks, playgrounds, highways and the like. The broader view, usually taken by courts which are inclined in doubtful cases to sustain the public interest at the expense of property rights, interprets the phrase in the light of the public advantage or welfare in the particular project involved in each case. Inasmuch as a slum area which is cleared, or the apartments in low-cost housing projects, cannot be made available to the entire public, a court which followed the conservative precedents would probably have reached an unfavorable decision.

The defendants placed great reliance on the recent decision of a Federal Court in Kentucky which held that slum clearance and low-cost housing were not public uses for which the Federal Government could condemn property. The right of the Federal Government to acquire land for such purposes is complicated by the question as to its inherent right to engage in such projects. In any event, the New York Court, in distinguishing that case, referred to "the ultra-conservative view of the Kentucky Court" and said:

> "That the land covered by this petition is to be used by a limited portion of the public is without question. The Court holds, nevertheless, that the use here is a public use, i.e., to abolish disease-breeding slums for the benefit of all the people of the state, and to furnish 'a limited portion of the public' (readily ascertainable) living quarters which will prevent disease. The people of the state of New York have the right to take back their land for such a purpose."

If the Kentucky decision is not reversed on appeal, then the Federal Government, in order to acquire some of the land for its proposed housing program, will be forced to bring proceedings in the courts of the various states. In such event the New York decision will prove of inestimable value.

The courts have yet to pass upon a closely related point, and that is, whether or not the power of eminent domain may be exercised by the state to acquire property for the building of low-cost housing projects, where the element of slum clearance is not involved. The New York Court has just held that the combination of clearing slums and building low-cost housing is a public use. Because of the wording of the statute before the Court, no separation of the two was required.

"Wild Animals I Have Met"

By A. METER READER

"GIT along, little doggie" has been suggested as the theme song for meter readers. In addition to surmounting all the normal handicaps to reading meters covered with dirt or dust, hidden in dark corners, or otherwise obscured, the poor meter reader must be on the alert for unwelcome advances from "little doggies" on the properties of water consumers.

In Los Angeles there are more than 5,000,000 meter readings to be made each year, both water and electric, so the exposure rate is naturally quite high, but casualties are reported by the Supervisor of the Meter Reading and Record Section to be in the neighborhood of only ten bites a month. Every employee who is bitten, chewed or just nipped is supposed to report at the Receiving Hospital for prompt treatment. Those who have done so say that the cure is usually worse than the bite.

As soon as a reader meets up with a dog that has a propensity for a morsel of human flesh, he promptly makes an entry of "Vicious Dog," or some such remark, on the meter read sheet. Next month and the following month, the reader does his stuff under the protection of the dog's owner. The Department's meter read books are sprinkled liberally with such warnings.

A "SAVAGE" ATTACK UPON A METER READER

Dog Tales

During the course of a year many dog tales are related by members of the meter reading force. One of them concerns the individual who was backing off cautiously from an ominous sounding hound when suddenly he tripped on the back steps, his read book and flashlight flying into the air. With visions of being set upon, and providing a meal for the animal, he looked around to find that the flying objects had chased the family pet into the far corner of the yard.

Another athletic reader took to his heels when charged by one dog, hurdled the fence in Olympic games style, only to find that he landed in the next yard where an even larger dog was waiting to greet him in anything but a friendly manner. This individual knows now the literal meaning of "Out of the frying pan into the fire."

The Proper Approach

The subject of the experiences with dogs was brought up by an article in *Time*, the weekly news-magazine, describing a pamphlet on "Dogs; How to Approach and Handle Them," distributed to meter readers of a large eastern utility. Specially prepared for them by Frank F. Dole, authority on the subject, it gives the following rules:

Make a little noise, to let the dog know you are coming.

Show no alarm at growls or barks. They are simply challenges.

Welcome the dog's acquaintance-making sniffs.

Make no sudden or unnatural movements.

Speak only in a confident, friendly voice.

Keep your hands off.

Impress the dog with the propriety of your visit.

These common-sense rules are printed here because they may be helpful to others than meter readers. Better, however, than all these rules is the ownership of a dog, according to William Jacobson, Supervisor of the Meter Reading and Record Section of the Department of Water and Electricity of Los Angeles. That doggy odor about the trouser legs is a letter of introduction. It will usually get the possessor past the best-guarded portals.

Biting Forbidden by Law

The State Legislature of California recently passed an act depriving a dog of the right to even a first bite, but Los Angeles meter readers do not take advantage of this act to sue for damages. They consider it one of the incidentals in maintaining good-will among the Department's consumers. Furthermore, they are instructed not to strike or kick at a dog.

The Rest of the Menagerie

But the battle is not won even by solving the dog problem. Other animals that make the day's work interesting for a meter reader are sharp-spurred roosters, hissing geese and razor-beaked parrots. Salute the Meter Reader—unsung, undecorated veteran of the backyard menagerie.

EDITORIAL NOTE.—We acknowledge with thanks the cooperation of the staff of *The Intake*, the delightful magazine of the Los Angeles Department of Water and Electricity, for this article and the illustration showing a savage attack of a pet dog upon his master's shoe.

Public Works—or Raking Leaves?

If American civilization is to continue; if the heavy industries cannot absorb the unemployed at the old rate, then public works must take the place of the flywheel of capitalism. This means either raking leaves from east to west and back to east again, or it means following carefully developed blueprints for the creation of new social wealth—for real capital, rather than phoney capital like unrentable skyscrapers.—From "Old Man River," by Stuart Chase, *The New Republic*, March 27, 1935.

FORWARD STEPS

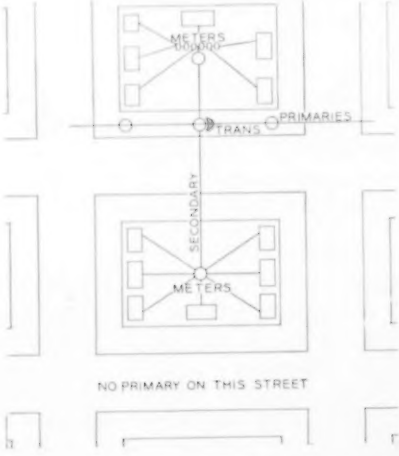
Reported by
Municipal Officials, Chamber of Commerce Executives, and Others

Electric House Meters Placed in Groups on Poles Outdoors

FREMONT, NEBR.—This city of 12,000 population is spending $60,000 to place all its residential electric meters outdoors on poles. There are more than 3,000 of these meters, and they will be in groups of two, four, or six to the pole in a meter trough at eight feet above ground level. The distribution system included 3,600 poles, half of which are now being discontinued.

City beautification, economy, and a desire for public good-will prompted the project. Housewives will be spared the inconvenience of calls by the meter reader, and he will be able to read more meters. Another economy is smaller distribution losses by the use of shorter and heavier distribution leads.

Primary lines will be on every other street, and one transformer will serve an area of two square blocks, as shown in

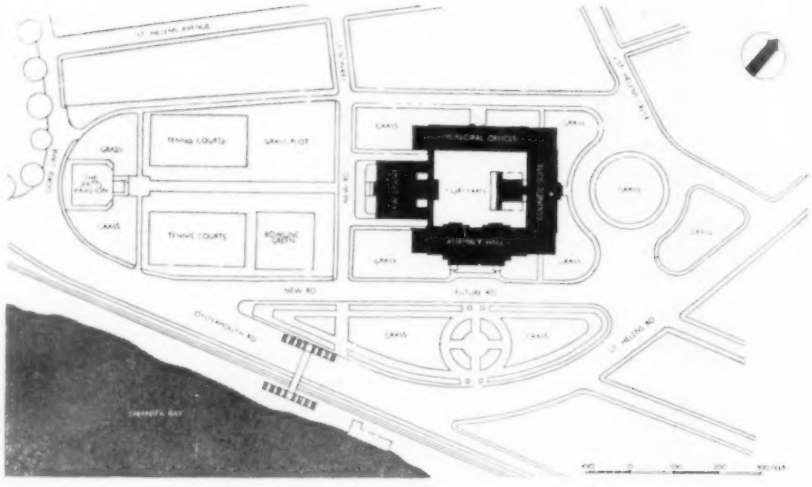


the sketch. The transformer is on the middle pole of the block on the street dividing the area served. Lateral secondaries on three-wire Hubbard-type secondary racks lead 110-120-volt current from the transformers to the pole in the center of each block.

The meters will be the new "S" or socket type, separately contained in G. E. 1-20C aluminum cases, and locked to the meter trough, in which are three rubber-insulated bus bars. Radial distribution from meters to dwellings is by No. 6 theft-proof cable, anchored by Hubbard wedge-grip brackets. Wood molding covers the cable that leads from the suspension point above, down past the telephone cable that is on these poles, to the meters.

Fremont is served by a municipal plant that has been in operation 42 years. It is a steam plant having a capacity of 6,500 kw and an annual output of 9.3 million kilowatt-hours. Average residence consumption is 70 kw per month. There is no bonded indebtedness, and the net profit in 1932-33 was $35,611. Gross profit for the sixteen years to that date was $1,286,164. The money for this work comes from the depreciation fund of $380,000. In line with this 20-year amortization improvement, the water meters will also be transferred, as part of this project.

DONALD G. ANDERSON.



SITE PLAN OF THE SWANSEA CIVIC CENTER
Showing future layout between the Assembly Hall and the sea-front

The Civic Center in Swansea, Wales

THE site of the new civic and municipal group in Swansea is an ample and level park close to the sea-front of Swansea Bay. The plan of the site, herewith reproduced, shows the future layout of the park, which will be accomplished within a few years by the demolishment of certain Corporation buildings when their leases expire. THE AMERICAN CITY is indebted to the *Journal of the Royal Institute of British Architects* (February 23, 1935) for the material descriptive of this interesting piece of public construction.

The winner in the open architectural competition was Percy E. Thomas, of Ivor Jones & Percy Thomas, who planned the Council Chamber, Municipal Offices, Assembly Hall and Law Courts as four separate units, grouping them around a rectangular court. By this means, Mr. Thomas reduced the cost of meeting one of the conditions of the competition—that

THE SWANSEA CIVIC GROUP AND ASSEMBLY HALL—GENERAL VIEW FROM THE EAST

the outer faces should be in Portland stone; for the side of each unit facing the court could be in brickwork. The Municipal Offices were placed in a double row in a simple block, with a central corridor, as is customary in commercial office buildings.

The general view from the east, given here, shows the good massing of the winning design, with its effective tower, 160 feet high, placed on the axes of the two roads which run along the bay and meet at the Guildhall. This is the center of the residential part of the town, which lies around the lower slopes of the hills, and the tower clock can be seen from most of the houses. The tower is used as a sailing mark in Bristol Channel.

It was required that a semi-basement should be provided, in order to make use of the excavation which would result from removing the made land which formed the top soil. To avoid making the building appear to be partially sunk in the ground, the walls were given a base of strongly marked horizontal courses, into which the windows of the semi-basement were cut. A good foundation of gravel was found at a depth of 12 feet below ground level.

The general construction is solid walling with reinforced concrete slab floors and flat roofs surfaced with asphalt, except the Assembly Hall, which has a low-pitched roof of green glazed pantiles. The careful proportioning of foundations to give the same earth pressure for all the various loadings, together with a system of ingenious roof expansion joints, has resulted in the total absence of cracks. The interior walls are of structural brickwork, except in the municipal office block, where partition slabs have been used, to provide for alterations.

The heating plant is an electric thermal storage system, consisting of two 850-kw electrode boilers. Current is purchased at off-peak hours from the municipal supply. Hot water heaters mainly provide the heating, operating in conjunction with an exhaust ventilation system. The entrance halls, main staircases and similar public circulation spaces are heated by floor panels mainly under marble flooring. The coils which form the panels are served by local calorifiers from the radiator mains, providing the lower temperature required. The Assembly Hall is warmed and ventilated by an air-conditioning plant which introduces the washed and tempered air through ceiling grilles, the extracts being at floor level.

The tower clock serves as master for a system of electric clocks throughout the building. The clock and tower are permanently floodlit. A ring lighting main is buried in the grass border surrounding the building, with plug boxes at intervals, to allow a temporary system of floodlighting for the whole building.

The total final construction cost of the four units was £343,000.

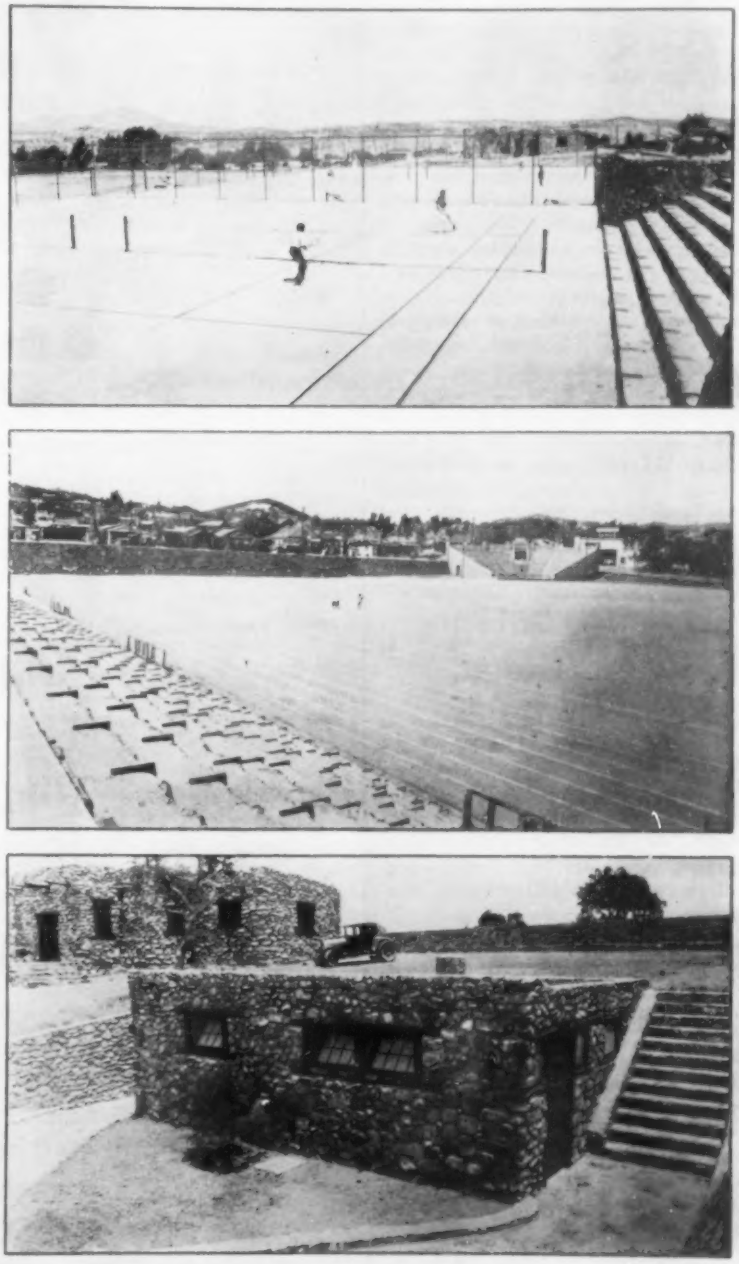
Detailed information regarding the layouts of the separate units, the finish, decoration and furnishing of the rooms, and the mechanical equipment, with many illustrations, are given in the number of the *Journal* referred to.

Natural Resources Used to Make an Attractive Recreation Center

PRESCOTT, ARIZ.—For some time Prescott has been applying local relief labor to what was once considered worthless, unattractive cobblestone, and finds the result popular and permanent.

These developments are due to the intiative of the local Park Commission, which in 1930 began the improvement of an athletic field 340 by 600 feet. As local citizens realized the value of this project in the community, enthusiasm was generated and various local organizations contributed funds which enabled the Park Commission to extend its initial program.

As a result, the city and county together have built an athletic field with a seating capacity of 4,000 and parking space for 500 cars. In an adjacent area four double tennis courts with bleachers for 1,000 have been finished. The entire recreation center is surrounded by rock walls, presenting a pleasant view and enclosing space for various types of healthful recreation. Improvements on



RECREATION FACILITIES IN PRESCOTT, ARIZONA

Top—Two concrete tennis courts were not enough, so two more were built, by relief labor. Center—Athletic field, with stadium in background. Bottom—Public rest room, and Indian pueblo at rear left

the field include an Indian pueblo of native stone, a large public museum, a concrete stadium, stone bleachers, water and sewer lines, and public rest rooms.

Such interest has been shown by the citizens that the Park Commission plans to continue this program by the immediate installation of a Cyclone fence around the park, which will be covered by native vines that will screen the field.

CHARLES F. ROBB,
Mayor.

Compact Exhibit of Housing Available

THE Housing Study Guild, 101 Park Avenue, New York City, has prepared an educational exhibit titled "Objectives for Urban Living," directed primarily at the educator and advanced student. The exhibit presents Housing in the Unplanned City—the Corollaries and Causes—as contrasted with Modern Housing in the Planned Community.

The material is distributed over 22 photo mural panels—with text, drawings, and statistical charts interwoven. A continuous band at the bottom of each panel contains footnotes, bibliographic references, and documentation.

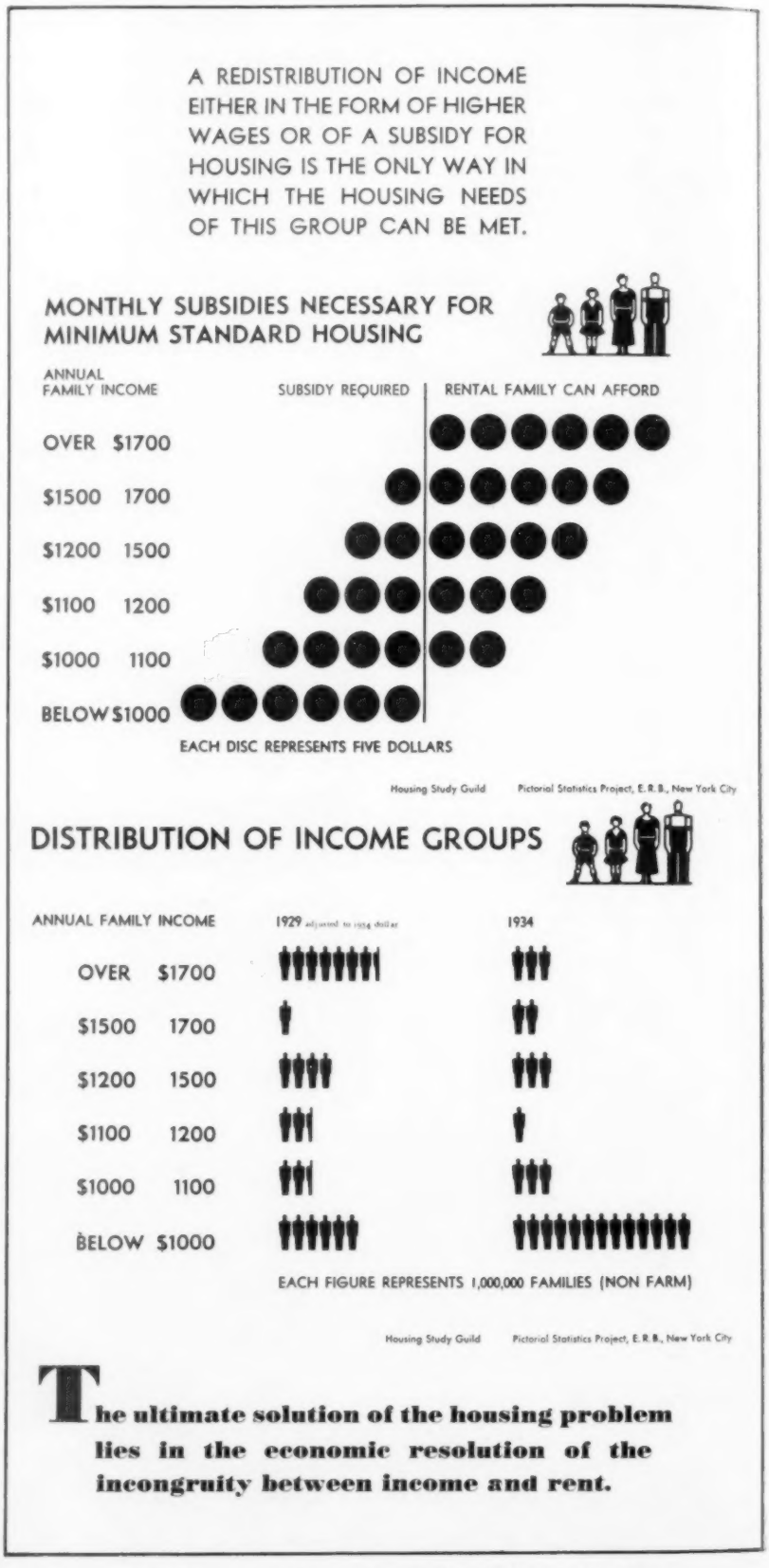
The exhibit has been designed especially for traveling, and the panels fold easily into a box 20 x 30 x 6 inches. Bookings are now being made for two duplicate sets for showing by interested groups and individuals throughout the country. Inquiries are invited by the Guild.

Wheeling Adopts Proportional Representation

FOLLOWING a vigorous campaign conducted under the leadership of the Wheeling Association, the citizens of Wheeling, W. Va., voted on April 18 to adopt a new charter including proportional representation and the city manager plan.

Under the new charter, which is patterned largely after that of Cincinnati, nine councilmen will be elected together by P. R. from the city at large for terms of four years. The first P. R. election will be held on June 4. The council will elect a mayor from its own number, and a city manager will be appointed for an indefinite term, subject to removal by the council.

When the new council takes office on July 1 it will appoint the first city manager which Wheeling has had since that city abandoned an inferior manager plan arrangement in 1929. Charles P. Taft's book, "City Management: The Cincinnati Experiment," is said to have been a major inspiration in the charter campaign.


A REDISTRIBUTION OF INCOME EITHER IN THE FORM OF HIGHER WAGES OR OF A SUBSIDY FOR HOUSING IS THE ONLY WAY IN WHICH THE HOUSING NEEDS OF THIS GROUP CAN BE MET.
MONTHLY SUBSIDIES NECESSARY FOR MINIMUM STANDARD HOUSING
ANNUAL FAMILY INCOME
SUBSIDY REQUIRED
RENTAL FAMILY CAN AFFORD
OVER $1700
$1500 1700
$1200 1500
$1100 1200
$1000 1100
BELOW $1000
EACH DISC REPRESENTS FIVE DOLLARS
Housing Study Guild Pictorial Statistics Project, E.R.B., New York City
DISTRIBUTION OF INCOME GROUPS
ANNUAL FAMILY INCOME
1929 adjusted to 1934 dollar
1934
OVER $1700
$1500 1700
$1200 1500
$1100 1200
$1000 1100
BELOW $1000
EACH FIGURE REPRESENTS 1,000,000 FAMILIES (NON FARM)
Housing Study Guild Pictorial Statistics Project, E.R.B., New York City
The ultimate solution of the housing problem lies in the economic resolution of the incongruity between income and rent.

ONE OF THE 22 PANELS IN THE HOUSING STUDY GUILD'S TRAVELING EXHIBIT

The Return of the Saloon

President Roosevelt in his Repeal Proclamation said:

"I ask especially that no state shall by law or otherwise authorize the return of the saloon either in its old form or in some modern guise."

HOW has this request been met in the restoration of legalized traffic in intoxicating liquor, in relation to the problems of the community, the home, and especially the child?

An answer for Chicago is given by the Juvenile Protective Association of that city in an exceptionally continuous factual study of liquor traffic in the light of social problems, submitted to the Board of Directors of the Association on February 1, 1935, by Jessie F. Binford, Executive Director of the Association. It covers the conditions which had arisen in Chicago since the repeal of the Eighteenth Amendment, December 5, 1933, and February 1, 1934, when the Illinois Liquor Law became effective.

During the period June, 1934—February 1, 1935, the Juvenile Protective Association of Chicago investigated conditions in 334 taverns, liquor stores, school supply stores and school lunch rooms also selling intoxicants, Cook County roadhouses, and county taxi-dance halls operating in conjunction with barrooms. The 506 visits constitute studies of the retail liquor establishments in representative communities in different parts of the city and county. They include also investigations made at the request of civic associations, other social work and relief agencies, probation officers of the Juvenile Court, Parent-Teacher Associations, and of men and women who appealed for aid in remedying undesirable conditions in their neighborhoods.

The first interest of the Association has been to combat abuses whenever they came to light. In every case where violations of state or local liquor laws were observed, and whenever conditions inimical to the welfare of communities, homes and children were found, the Association's reports were forwarded to the City Commissioner of Police or to the State's Attorney and the County Sheriff, with requests for the needed law enforcement.

THE EXISTING CONDITIONS

Bars

The law against bars (excepting food counters in restaurants and "service" bars) is utterly ignored. Every saloon-tavern has its bar, in open violation of the state law. The effect of the bar is clear: it creates the saloon atmosphere.

Blinds

In many parts of the city saloon-tavern keepers boldly put up window curtains and door strips so as to prevent even a glimpse into their establishments from without. Everywhere are booths, partitioned and curtained back-rooms, and darkened recesses—all illegal.

Illegal Sales

No provision of the law is more disregarded than the article banning the sale of intoxicating liquors to drunken patrons.

Closing Hours

Until December, 1934, saloon-taverns throughout the city brazenly violated the local ordinance which requires liquor sales to cease at 1:00 A.M.—2:00 A.M. on Sunday. Liquor could be purchased at tables in these places at any hour of the day or night. When at last the barroom lights were extinguished, in many cases patrons could come in at the "family entrance" and drink as long as they pleased in the hidden back-rooms.

Public Places of Amusement

The amusement license serves frequently as a pretext for remaining open throughout the night—of course selling liquor. The entertainment in an unexpected number of these places was altogether vile, a menace to public decency. Filthy songs and dialogue and other features similar to those formerly found only in certain deteriorated areas appear now in the new saloon-tavern in all parts of the city.

Children in Shows

Little children were exploited by saloon-tavern keepers for the amusement of the night-life crowds. As an example: the four-year-old child who performed in a saloon show at 1:00 A.M.—then had to ride eight miles with street-car transfer, before being put to bed.

Illegal Entertaining

In addition to violations of child labor statutes and the laws against immoral and indecent performances, the saloon-tavern entertainers flouted a city ordinance which forbids their mingling with patrons.

Hostesses

The hostess is employed to separate the patron from his money by wheedling, shaming or flattering him. As a rule, commissions are not paid upon beer purchases, therefore the hostess who works on commission is a potent factor in stimulating the sale of highly alcoholic beverages. Many loathe the indecent implications of their job—"but what can you get nowadays?" Others appear to be little better than prostitutes. All come to look upon the saloon-tavern as a game pit, its business a dog-eat-dog affair.

Young Girls

Youth, beauty and girlish freshness are a real boon to the trade. The dangers to young and inexperienced girls in the saloon, in contact with alcoholism and promiscuity, are too obvious to require comment.

Gambling

Gambling in one form or another has flourished in saloon-taverns in all parts of the city and county.

Special Inducements

The gambling, in common with other features in the saloon-taverns which are in themselves immoral and socially destructive, is doubly significant because—for instance—dicing at the bar stimulates an abnormal consumption of liquor—and of the more potent liquors. The patron knows that if the bartender wins, he will collect the price of the more costly drink, so, win or lose, the patron has the same. The purpose of the shows is to attract a crowd and then keep the crowd drinking as long as possible. That is why brief sections of entertainment at long intervals are usually offered: stay another hour, and there will be more of a show.

Dancing

The dance hall has been moving bodily

into the saloon, and no effort is being made to supervise conduct on the floor. The long intervals between dances encourage heavy drinking. While the respectable mature element in a community avoid these places, youth is found there mingling with the maudlin, intoxicated, quarrelsome and profane.

Vice

Vice in Chicago's saloon-taverns flourished, in all its offensive details.

Minors in Saloons

In addition to children used in shows, numbers of others following the street trades were found regularly visiting the taverns and witnessing appalling scenes of intoxication and debauchery.

Saloon-Taverns in a Good Neighborhood

The evils of the saloon are not confined to congested, slum and "cheap" neighborhoods in the city. The Austin section of Chicago is a residential neighborhood of superior character and was always a dry territory in the pre-prohibition era. Alarmed by conditions in the taverns there, the citizens sought to rid the locality of its liquor establishments under the local option provision of the State Liquor Law. The Association's survey indicated that Austin liquor conditions were identical with those encountered in the saloons throughout the city. In the ward embracing the larger part of the Austin community at least twelve precincts went dry in the election last November.

Children, School Stores and Liquor

There is imperative need for legislation to prohibit the granting of liquor licenses to such establishments as these, where a large part of the business is specifically to cater to children. The section of the Illinois law which requires only that the taverns be more than 100 feet from schools is useless for the purpose of combating this evil.

Liquor Stores

The Association has rarely received complaints against the liquor stores, except where they were operated in conjunction with taverns or with school supply or school lunch places.

County Taxi-Dance Halls

Unbelievedly bad conditions prevailed during the summer and autumn of 1934. These halls operated hand in hand with barrooms, and in them the traffic in liquor was unrestrained by any consideration of hours, intoxication, or the ages of patrons. The character of the dancing was revolting. Prostitution was the natural outgrowth of the conduct of these halls.

Such were the liquor conditions noted in Chicago from June until December, 1934, and, with some exceptions, they still exist.

SALOON-TAVERN CONTROL TODAY

Among the most important gains of which the Juvenile Protective Association is aware, most of the corrective steps having been taken in December, 1934, are:

Keeping Children Out of Saloons.—With the cooperation of the Police Department, there has been gratifying success in getting child performers out of saloon-tavern shows. Warnings to tavern keepers that child labor laws protect little children from the hazards of such employment have been more effective than a procedure of gathering evidence and bringing individual offenders into court. Some shows have been stopped for lack of licenses; others were observed repeatedly and the Police Department notified of violations.

Street Trades.—In accordance with a general order issued by the Commissioner of Police, the Association has reported all saloons permitting children on the premises. When saloon doors were closed to the children, the results showed in immediate and large declines in the number of children following the trades.

Case Work.—In each case in which the identity of the child could be secured, the child's problem became the subject of family work by the Association's staff.

Shows.—Some of the worst kinds of "amusement" have been stopped, by means of police warnings, arrests, and the revocation of licenses.

Closing Hours.—At the present time practically all bars in the city cease service at the legal hour, though liquor can still be purchased illegally at tables in the places of amusement. Many patrons who would drink through the night at the bar, do leave when the bar is closed.

County Taxi-Dance Halls.—The worst of these resorts were raided and closed as public nuisances following the Association's reports and appeals to the State's Attorney. As a result, in the words of an observer who has watched this situation over a number of years, a most notorious taxi-dance, vice-center suburb is now "only a shadow of its former (criminal) self."

In other respects the traffic in liquor remains much as it was during the last six months of 1934. The real and important gains that have been made must be maintained. Such evils as have lately been overcome are bound to reappear unless there is active and continuous opposition.

The sale of liquor after the closing hours is unrestricted in many clubs and restaurant taverns. Complaints are still made by persons who have seen small children entertaining in saloon shows. It is known that soliciting goes on in the saloons today. Parents are having to prosecute proprietors for the sale of liquor to their children. The principal abuses existing are in the devices used by saloon-taverns to stimulate excessive drinking. If there is to be temperance and decency, and no surrender to pre-Prohibition evils again, either these abuses must be abolished, or the tavern itself must go.

THE FUTURE

Any real enforcement of the laws demands that violators, being detected, shall be arrested and that adequate efforts to secure convictions be made in the courts. Serious violations must be followed by revocation of licenses. Not until this procedure is followed will the provision in the state law that no future licenses may be issued to dealers whose permits have been revoked act as a genuine brake upon unwholesome and illegal conditions in the taverns.

New legislation is needed:

No licenses for school supply stores and school lunch rooms.

No employment of minors as bar maids, waitresses and entertainers where liquor is sold.

An amendment to the ordinance licensing public places of amusement, in order to distinguish large and responsibly conducted clubs from the corner saloon back-rooms; no licenses for premises that lack space and facilities to conduct entertainment properly.

A midnight closing hour.

Restriction of the number of taverns.

No selling, or buying by patrons, of liquor for female employees of a saloon—to end the hostess abuse.

A greater limit upon location in relation to churches and schools.

If existing laws cannot or will not be enforced, says the Association's report, "one of two things must happen. The pledges of the President of the United States that the saloon should not return in its old or in a new guise must be construed as a farcical play of words, and pre-repeal avowals of 'wet' leaders that repeal would be a step toward genuine temperance must be regarded as sophistries uttered in the interest of liquor commercialism; or, these pledges and avowals must be fulfilled in driving the saloon-taverns out of existence."

In conclusion, the report says: "The task is one calling for widely cooperative effort. It demands the attention of officials who have at heart the best interests of the community, of commercial interests who wish to see the liquor business decently conducted, of all citizens who recognize the desirability of true temperance, of all of us who are deeply concerned with the welfare of Chicago homes and Chicago's children and young people."

Water Rates and Service Charges, Installation Charges, Hydrant Rentals and Sprinkler Costs—XIII

Abstracts of Water Departments and Company Reports

East Orange, N. J.

Population	70,000
" served	70,000
Number of services	10,509
" " meters	10,509
" " hydrants	990
Miles of water main	117.1

The quarterly meter rates in East Orange are as follows:

First	50,000 cu. ft.	@ $1.70 per	$1,000 cu. ft.
All over	50,000 " "	@ 1.50 "	" "

Minimum Charges Per Quarter

5/8" meter	$ 1.70
3/4" "	4.00
1" "	6.00
1 1/2" "	15.00
2" "	20.00
3" "	45.00
4" "	65.00
6" "	125.00
8" "	200.00

Fire Line Meters

3"	$25.00
4"	35.00
6"	65.00
8"	100.00

Property owners are responsible for the protection of water meters from freezing or other damage. The cost of repairing a 5/8-inch meter is $5.50 and the charge for repairing a 5/8-inch meter damaged by hot water is $6.50.

There is no hydrant charge.

R. M. Roper,
Engineer and General Manager, Water Department.

Oil City, Pa.

Population	22,000
" served	26,000
Number of services	6,400
" " meters	6,400
" " hydrants	385
Miles of water main	62.0

The following monthly water rates are charged:

200 cu. ft.			83c minimum
First 1,600 cu. ft.			35c per 100 cu. ft.
Next 1,600 " "			30c " " " "
" 1,600 " "			25c " " " "
" 1,600 " "			20c " " " "
Over 6,400 " "			10c " " " "

All bills are due and payable on presentation monthly. A discount of 10% is allowed for payments made on or before the 10th day of the month following that for which the bill is rendered. Accounts delinquent for more than 30 days have the water shut off, and the water is not turned on again until all charges plus $1.00 are paid. Liens are filed against property having delinquent accounts the same as in the case of unpaid city taxes.

A separate tap to the city water main is made for each property to which water is furnished by the city. The taps are made by the city employees or under their direction at the cost and expense of the owner of the property. The usual tap charge is $18 for a 5/8" tap, $24 for a 3/4" tap, and $30 for a 1" tap. These charges also vary with the cost of extras for digging or materials.

There are no hydrant rentals.

Arthur Martin,
Manager, Bureau of Water.

West Allis, Wis.

Population	35,000
" served	35,000
Number of services	7,436
" " meters	7,436
" " hydrants	875
Miles of water main	74.97

There is only one rate for metered water in West Allis, this rate of $1.00 per 1,000 cu. ft. applying to all consumers large and small, with a minimum charge of $1.00. All taps are made by the city, which include curb stop and corporation stop, at the following costs:

3/4" corporation tap cock and 3/4" curb cock	$8.00
3/4" " " " " 1" " "	10.00
1" " " " " 1 1/4" " "	12.00

When a tap or connection is to be made to the water main, no work is done by the Water Department until the plumber in charge of the work for the consumer has prepared a trench 3 ft. wide and 5 ft. long on the side of the main on which the tap is to be made, and 1 ft. opposite the pipe where the tap is to be made.

The following prices are charged for permits for the installation of branches and taps; these prices include special sleeve boxes and valves.

2" tap on 6" pipe	$55.00
2" " " 8" "	60.00
2" " " 12" "	65.00
3" " " 6" "	60.00
3" " " 8" "	65.00
3" " " 12" "	70.00
4" " " 6" "	65.00
4" " " 8" "	70.00
4" " " 12" "	75.00
6" " " 6" "	90.00
6" " " 8" "	95.00
6" " " 12" "	100.00

The following prices have been established for the construction and setting of meter boxes, testing meters, setting meters, inspection, etc.:

Meter boxes for	5/8", 3/4" and 1" meters		$ 1.50
Testing	5/8", 3/4", 1"	"	1.00
"	1 1/4", 1 1/2", 2"	"	2.00
Setting	5/8", 3/4", 1"	"	1.00
"	1 1/4", 1 1/2", 2"	"	3.00
Inspecting, testing and sealing 3", 4" and 6" meters			10.00
Meter to be set by plumber.			
Testing 5/8", 3/4" and 1" meters, consumers' request			2.00
Testing 1 1/4", 1 1/2" and 2" meters, consumers' request			4.00
Testing 3", 4" and 6" meters, consumers' request per hour			1.00
Transferring from one location to another			3.00

Plumbers are required to purchase meter cocks and meter unions from the city at the following rates:

Meter Cock

5/8"	60	$1.30
3/4"	60	1.60
1"	60	2.75

Meter Unions

5/8"	60	35
3/4"	60	55
1"	60	80

The Department receives $10 per year per fire hydrant from the city. On unmetered private fire protection systems, the following charges are made where automatic sprinklers are installed:

For the whole or fractional part of each quarterly year's service,

First year per quarter	$6.25 for 4" connection
Annually thereafter	25.00 " 4" "
First year per quarter	12.50 " 6" "
Annually thereafter	50.00 " 6" "

Robert Singer,
Superintendent, Water Department.

Twin Falls, Idaho

Population	8,900
" served	8,500
Number of services	2,700
" " meters	2,360
" " hydrants	132
Miles of water main	48.0

The water rates in Twin Falls are as follows:

First	6,000 gals.		$1.65
Next	4,000 "	at	8c per 1,000 gals.
"	10,000 "	"	7c " " "
Over	20,000 "	"	6c " " "

There is a 10% discount if the water bill is paid by the 10th of the month.

There is a standard installation charge of $16 for each new service.

The city pays the Water Department nothing for the installation and maintenance of fire hydrants.

J. M. Dimond,
Superintendent of Water, and Overseer of Streets.

Flint, Mich.

Population	156,000
" served	150,000
Number of services	37,860
" " meters	32,719
" " hydrants	2,397
Miles of water main	385.71

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Within ⅛-Inch Surface Variation Under 10-Foot Straight Edge.

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Rolling Time 30% to 50% Less—No Cross Rolling.

● The center roll of a Roll-A-Plane is a sentinel placed on guard in the plane of the front and rear rolls, to detect and reduce every irregularity. The diagrams at the right show how it becomes self-actuating after once being lowered into position. The greater the irregularity to be reduced, the greater the force brought to bear at the third pressure point—up to 85% of the machine's weight if necessary. The center roll exerts a negligible force when no high spot appears but concentrates a practically irresistible force in a kneading, compacting, leveling action when an irregularity is met. Its alignment in relation to the other rolls establishes a true plane which is transferred to the surface being rolled.

Engineers are discovering new values in the principle as more and more Roll-A-Planes are put into service. Contractors and highway officials are discovering a new conception of levelness and a new low cost for quality roads. The industry is accepting as its standard the Roll-A-Plane, or Austin-Western Rollers on which the Roll-A-Plane feature can be added later. A new booklet now on the press describes the Roll-A-Plane process. Send the coupon.

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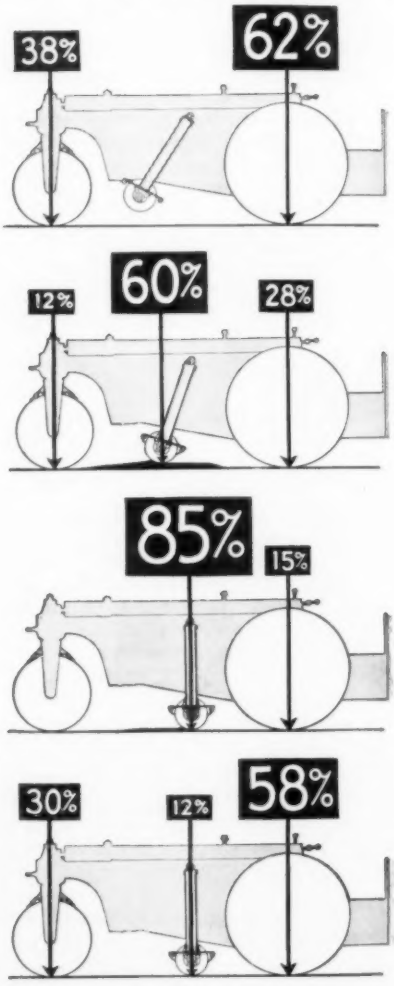

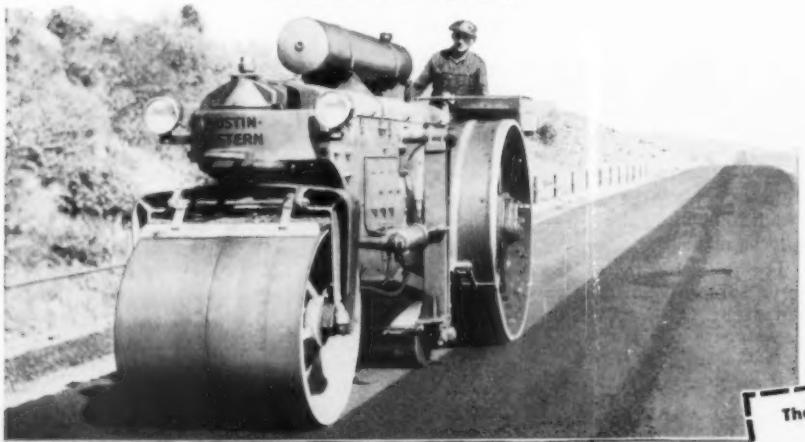

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Please furnish ☐ New Booklet. ☐ More details on the Roll-A-Plane.
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During May we hope you will remember to mention THE AMERICAN CITY

Water used is billed quarterly at the following rates:

15c per 100 cu. ft. for the first 10,500 cu. ft.
11c " " " " " " next 10,500 " "
8c " " " " " all in excess of 21,000 cu. ft.

The quarterly minimum charge for meters, which includes the use of water, is based on the size of the meter as follows:

⅝" meter	all under 900 cu. ft	$2.00
⅝" meter	1,000 to 1,500 cu. ft., inc.	2.25
1" "	2,200 " " "	3.36
1½" "	3,700 " " "	5.61
2" "	5,200 " " "	7.86
3" "	21,300 " " "	27.54
4" "	48,000 " " "	48.90
6" "	123,200 " " "	109.11
8" "	249,800 " " "	210.36

These rates are increased 50% for water delivered to consumers outside the city limits.

Applications for the use of water must be made in writing by the consumer at the office of the Water Department on a special form and a deposit made covering the cost of the taps and service.

Water is shut off and the meter removed when bills are not paid promptly, and a charge of $1.00 is made and collected before the water is turned on again. All bills are due on the first of the month rendered and are payable on or before the 23d of the following month. If not paid at the office on or before the latter date, there is an additional charge of 10%.

There is no charge for public or private hydrants or for sprinkler installations for fire protection.

E. L. Halloway,
Superintendent, Water Department.

Oneonta, N. Y.

Population	13,000
" served	14,500
Number of services	3,277
" " meters	1,346
" " hydrants	228
Miles of water main	43,121

The meter rates for domestic and industrial services in Oneonta are as follows:

0–50,000 gals.	$0.30	per 1,000 gals
50,000–100,000 "	0.20	" " "
100,000–1,000,000 "	0.09	" " "
All over 1,000,000 "	0.07	" " "

The minimum charge per year depends upon the size of the meter and is as follows:

⅝" meter	$12.00
¾" "	14.00
1" "	16.00
1½" "	20.00
2" "	24.00

Applications for a permit to connect service or supply pipes to the distribution line are made by the person desiring the service. Whenever two or more parties or families are supplied with water from the same service pipe, the failure of any one of the parties to pay his water bill when due or to comply with the rules and regulations of the Water Department is considered sufficient cause to withhold all water supply from that service pipe without liability of damages to either of the other parties.

The hydrant rental to the city of Oneonta is $25 per hydrant per year, the rental to the town is $40 per hydrant per year, and charges for sprinkler systems are the same as for fire hydrants. The charges for water delivered to consumers in the town of Oneonta are the same as in the city plus a charge of 25%.

William W. Watkins,
Superintendent, Department of Water.

Pomona, Calif.

Population	20,804
" served	20,000
Number of services	5,800
" " meters	5,800
" " hydrants	695
Miles of water main	120.0

All water furnished by the Water Department of the city of Pomona for domestic, industrial and commercial use within the city is subject to the following monthly charges:

For ⅝" Meter

700 cu. ft. minimum $1.10 per mo.
700 " " to 5,000 cu. ft. at.....15c per 100 cu. ft.
Over 5,000 cu. ft..... 8c " " " "
25c penalty is added if the bill is not paid within 30 days from date rendered.

For ¾" Meter

900 cu. ft. minimum $1.40 per mo.
900 " " to 5,000 cu. ft. at.....15c per 100 cu. ft.
Over 5,000 cu. ft..... 8c " " " "
Same penalty for non-payment.

For 1" Meter

1,200 cu. ft. minimum $1.85 per mo.
1,200 " " to 5,000 cu. ft. at....15c per 100 cu. ft.
Over 5,000 cu. ft..... 8c " " " "
Same penalty for non-payment.

For 1½" Meter

1,600 cu. ft. minimum $2.45 per mo.
1,600 " " to 5,000 cu. ft. at....15c per 100 cu. ft.
Over 5,000 cu. ft..... 8c " " " "
Same penalty for non-payment.

For 2" Meter

1,900 cu. ft. minimum $2.90 per mo.
1,900 " " to 5,000 cu. ft. at....15c per 100 cu. ft.
Over 5,000 cu. ft..... 8c " " " "
Same penalty for non-payment.

Apartment Houses

Where one or more meters are installed in apartment houses, the 700 cubic-foot minimum for each meter is charged at $1.10 per month per meter. For each additional apartment, there is a charge of 50c which is credited to the water used over the minimum allowed at the regular rates.

Before any water is supplied to any premises, the owner and/or consumer must make application to the Water Department. Services and meters are installed upon payment of the following charges:

Unpaved streets and alleys—up to and including:

¾" service	$20.00
1" "	35.00
1½" "	60.00
2" "	90.00

Paved streets and alleys—up to and including

¾" service	$30.00
1" "	45.00
1½" "	70.00
2" "	100.00

Services larger than 2" and all services outside the corporate limits of the city are charged at the cost of material and labor used, provided that the minimum charge for any service installed outside the corporate limits of the city is not less than $50. All costs must be deposited in advance with the Water Department before work is begun. No service is made nor water delivered through a common service pipe to two or more parcels of property separately owned unless there is no main contiguous to those premises from which service may be had.

All charges for water as well as all charges or accounts of any kind made by the Water Department are a lien against the property, and at the expiration of 30 days water is shut off and is not turned on again until all charges are paid plus a charge of $1.00 for turning on the water. No change of ownership or occupation affects the lien created. The Manager of the Water Department has the power in his discretion to adjust complaints and grant rebates from the rates to indigent persons. In the event of any dispute as to the water rate to be paid by any consumer, the Manager determines the settlement, subject to the approval of the City Council.

A monthly rental of $250 was paid out of the general fund of the City Treasury from the budget of the Fire Department to the Water Department for fire hydrant service and maintenance, but these payments were discontinued in September, 1934.

Where an installation is required for private fire protection, the service is installed and the meter furnished by the Water Department at the expense of the applicant, the charge being the full cost of time and material required, including excavation and repaving plus 10% for administration. This includes the installation of a proportional meter where services are used only in case of fire.

Fred. C. Froehde,
Manager, Pomona Water Department.

Del Rio, Texas

Population	14,000
" served	14,000
Number of services	2,700*
" " meters	2,400‡
" " hydrants (fire)	250
Miles of water main	85.0

*500 recently acquired in San Felipe.
‡3,200 by July 1.

The water rates for Del Rio are $1.50 minimum for the use of 10,000 gals. in 30 days. The second 10,000 gals. is billed at 10c per 1,000 gals., and then all water up to one million gals. used in a 30-day period is charged at the industrial rate of 7c per 1,000 gals. The water rates have been reduced 73% under the present administration since 1919, when the city acquired same.

There is no rental for fire hydrants, as the water works are owned by the city and the installation is paid for by the city. Connections for consumers are made at cost from the main to the cut-off or meter, or into the yard at the curb cock for approximately $27.

A. Herzeny,
Superintendent, Water Department.

"I NOW DO 10 HOURS WORK IN 8 HOURS

SINCE CHANGING TO ZERO PRESSURE TIRES"

says Carl Anderson
Antioch Township
Antioch, Ill.

● We can show you how to cut your road maintenance costs 20% to 30%. A strong statement? Yes. But no stronger than the facts behind it.

Take the statement of Carl Anderson of Antioch, Ill., for example."Before we put Zero Pressures on this maintainer I used to get stuck several times a week. Now I can go anywhere and always have plenty of traction.

"With solids it took 10 hours to do the work I now do in eight. Furthermore, I used 13 or 14 gallons of gasoline for the job that now takes 10."

Less Machinery Maintenance

Mr. Carl Barthel, Township Commissioner, backs up this statement. He says,"We changed this motor grader from solid tires to Zero Pressures one year ago. I find we always have plenty of traction, that there is less vibration of the equipment and that there is therefore less maintenance expense."

Can't Go Flat!

You can make similar savings. These amazing tires can't puncture—can't go flat. A giant air cavity underneath the big cleat tread cushions the load, eliminates the bouncing of air pressure tires. The lug type self-cleaning tread has 30% more traction! That's the kind of tire that gets work done in a hurry—that saves real money.

End Tire Trouble

Put an end to tire troubles on graders, mowers, maintainers and tractors. Get the revolutionary Z-P (Zero Pressure) Pneumatics.

See your Goodrich Truck Tire Dealer or write for complete information on changeovers. Address Dept. Z-11, The B. F. Goodrich Co., Akron, Ohio.

Goodrich Z-P ZERO PRESSURE Pneumatic Tires

SPECIFY Z-P PNEUMATICS ON ALL YOUR NEW EQUIPMENT

Greenwood, Miss.

Population	11,127
" served	11,127
Number of services	2,177
" " meters	1,681
" " hydrants	175
Miles of water mains	22.0

The water rates for all services in Greenwood are:

First	10,000 gals. consumed per mo.	@	16⅔c per 1,000 gals.
Next	10,000 " " " "	@	10⅔c " " "
"	10,000 " " " "	@	10c " " "
"	70,000 " " " "	@	8c " " "
"	100,000 " " " "	@	6⅔c " " "
Additional	" " " "	@	6c " " "

The minimum charges per month are based on the size of service pipe and are as follows:

Minimum charge	¾" pipe or less	@	$ .75
" "	1" "	@	1.50
" "	1½" "	@	3.00
" "	2" "	@	5.00
" "	3" "	@	10.00
" "	4" "	@	16.00
" "	6" "	@	33.33

All service connections are made at cost plus 10% for administrative overhead.

No charge is made to the city for water for fire hydrants.

Private fire hydrants 2" or less in size are charged at $20 per year each.

Automatic sprinkler systems are charged according to the number of sprinkler heads as follows:

First	1,000	@	5c	per head per year	
Next	2,000	@	1½c	" " "	
"	2,000	@	1c	" " "	
All over	5,000	@	½c	" " "	

ROY STOTT,
Manager, Greenwood Light and Water Plant.

Riverside, Calif.

Population	32,000
" served	33,000
Number of services	9,357
" " meters	8,218
" " hydrants	777
Miles of water main	220.4

The schedule of domestic rates for metered services is as follows:

For the first 1,500 cu. ft. or less per month:

⅝" meter	$1.50
¾" "	2.00
1" "	2.50
1½" "	3.25
2" "	4.00
3" "	6.00
4" "	8.00

For services outside the city limits, 50c is added to the above rates. For the first 2,000 cu. ft. per month in excess of the above minimum, 7c per 100 cu. ft. is charged. In excess of 3,500 cu. ft. per month, 6c per 100 cu. ft. is charged.

INDUSTRIAL METER RATE

For the first 5,000 cu. ft. per month, the rates are the same as for domestic users. In excess of 5,000 cu. ft. per month, the rate is 6c per 100 cu. ft.

Bills become delinquent if not paid within 15 days after issue. Service is then discontinued until the bill and a reconnection charge of $1 are paid in full. Water rates are charged against the owner of the premises where used, and in no case are they charged against tenants or transient residents.

Service installation charges are as follows:

¾"	connections	$12.00
1"	"	18.00
1½"	"	28.00
2"	"	40.00
3"	"	100.00

The rental for public hydrants for fire purposes is charged against the Fire Department and amounts to $5,000 per year. The private fire hydrant rental charge is 75c per month for one hydrant, and 50c per month each for more than one hydrant. There are no charges for sprinkler connections for private fire protection.

R. L. BOULDEN,
Superintendent.

Albert Lea, Minn.

Population	10,169
" served	Unknown
Number of services	2,300
" " meters	2,294
" " hydrants	240
Miles of water main	35.0

All persons whose property is served by, or connected with, the city water system pay the following rates for water supplied through one meter or used on one premises during one quarter:

First	15,000	cu. ft. or less,	$2.50	per 1,000	cu. ft.
Next	15,000	" " "	1.50	" "	" "
"	20,000	" " "	1.10	" "	" "
"	50,000	" " "	.90	" "	" "
All over	100,000	" "	.70	" "	" "

The minimum gross charge per quarter is $2.50 regardless of consumption unless the water service has been officially disconnected by the city for any reason, in which case the minimum charge is proportionately reduced to take account of the period that the service was disconnected.

All water accounts are computed and billed quarterly on the basis of meter readings. Quarterly water bills for the preceding quarters are due on April 1, July 1, October 1 and January 1. They are delinquent 30 days after they are due. A discount of 10% is allowed on current bills for water if paid on or before the delinquency date. To enforce the collection of delinquent bills, the water service in each case is disconnected if payment is not made after the rendering of a delinquent statement and 10 days' mail notice. Under these conditions water is not turned on again until the delinquent bill has been paid in full, together with a turn-on fee of $2. If a service has been disconnected at the request of the owner, a fee of $1 must be paid to the city before the service is connected again.

The charge for public fire hydrants is $25 per hydrant per year. There are no charges for sprinklers on private fire lines.

ROBERT ANDERSON,
Superintendent, Water Works Utility.

Virginia, Minn.

Population	12,000
" served	12,000
Number of services	2,312
" " meters	2,283
" " hydrants	161
Miles of water main	28.7

Water rates are payable monthly at the following rates:

First	10,000 cu. ft.		8c per 100 cu. ft.
Next	10,000 " "		6c " " "
All over	20,000 " "		5c " " "

The minimum monthly charge is 25c, and all bills are subject to a discount of 10% if paid on or before the 16th of the month.

The charge for tapping the main for a new service is $1.00. The city installs a copper service pipe and curb cock at the property line, the customer installing the remainder of the service to the house.

There are 50 fire hydrants rented at $50 each per year, 50 at $80 each per year, and 61 hydrants at $60 each per year. There are no private fire hydrants.

M. C. BRIGHT,
Superintendent, Water and Light Commission.

Santa Barbara, Calif.

Population	35,000
" served	37,500
Number of services	9,477
" " meters	9,458
" " hydrants	810
Miles of water mains	160

The rates for water served to consumers by the City Water Department are as follows:

12c	per 100 cu. ft.	for the first	5,000 cu. ft.
10c	" " " "	next	25,000 " "
9c	" " " "	all over	30,000 " "

All bills for water service under the above rates are on a monthly minimum base of:

Size of Meter	Monthly Minimum	Quantity Allowed
⅝"	$1.00	833 cu. ft.
¾"	1.30	1,062 " "
1"	1.70	1,376 " "
1½"	2.45	2,021 " "
2"	3.20	2,646 " "
3"	4.80	3,979 " "
4"	6.20	5,176 " "

Each and every building having a street frontage is charged the minimum meter rate. Houses in the rear are billed 30c for each additional house as a minimum.

Bills not paid on or before the 15th of each month become delinquent and a 10% penalty is added; and a penalty of 50c is charged where the water is shut off for non-payment of account and water is not turned on until all arrearages and penalties have been paid.

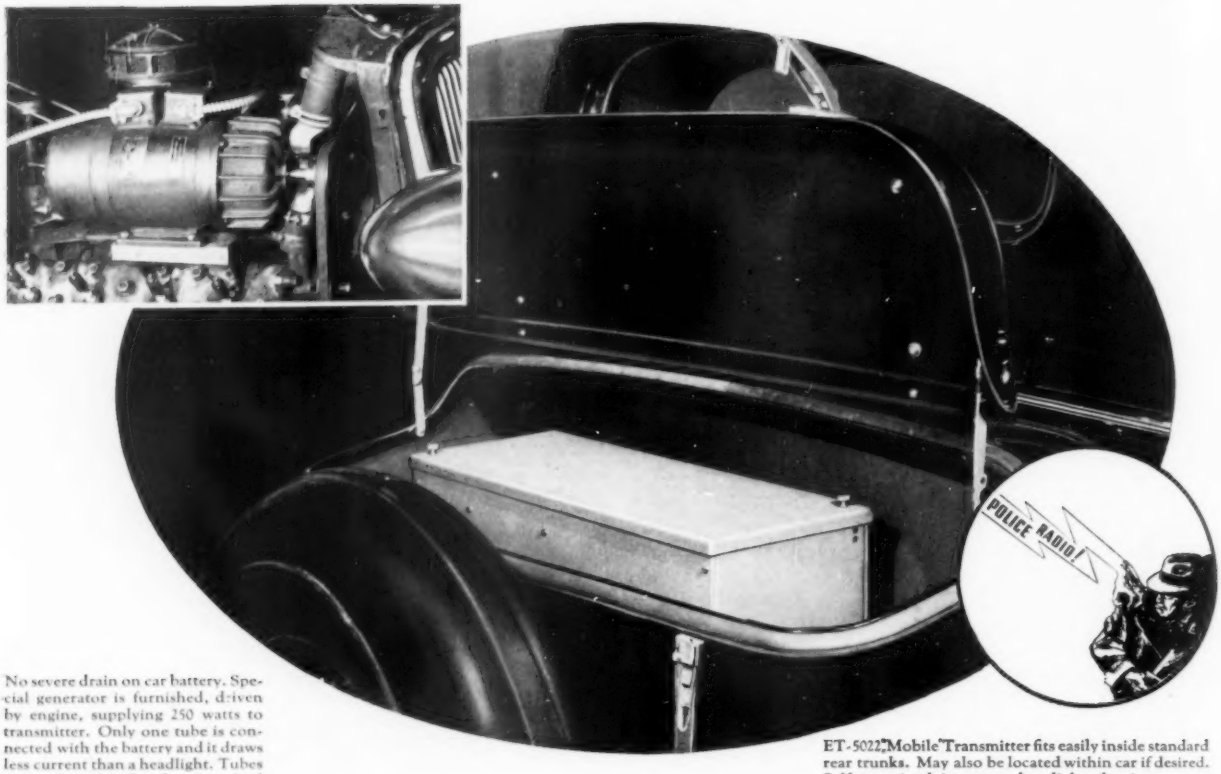
There is no charge for public fire hydrants.

Rates for private fire line service when meter is not required:

1½"	service	$10	per annum,	payable	semi-annually		
2"	"	12	"	"	"	"	"
4"	"	15	"	"	"	"	"
6"	"	20	"	"	"	"	"

V. E. TRACE,
Superintendent, Water Department.

RCA Makes Another Great Contribution to Crime Control



No severe drain on car battery. Special generator is furnished, driven by engine, supplying 250 watts to transmitter. Only one tube is connected with the battery and it draws less current than a headlight. Tubes are easily replaced and are standard types obtainable anywhere.

ET-5022 "Mobile" Transmitter fits easily inside standard rear trunks. May also be located within car if desired. Self-contained in strong but light aluminum case, mounted on shock absorbers. Total weight about 60 lbs.

Adds 2-way communication to Terra-Wave Police Radio System

Here is the biggest news since the introduction of the famous RCA Terra-Wave Police Radio! Now your patrol cars can be equipped for 2-way radio communication, easily doubling the effectiveness of the system. Cars using the new RCA Terra-Wave Mobile Transmitter can call headquarters by radio to transmit important information, acknowledge orders, answer questions, ask for help, advise when returning to service. Within 3 seconds after pressing a switch, every word spoken by the driver is heard by the despatcher. There is no interruption of work on the immediate emergency.

Several years of intensive research went into this remarkable development. It had to be 100% right before it was worthy to bear the RCA Terra-Wave name. Power is 25 watts actually put on the air, the highest ever offered for such use. Our tests prove conclusively that this much power must be used if complete reliability is to be had—and nothing less than absolute reliability is good enough for police use.

The transmitter is compact, simple to operate and so sturdy that only a major collision can injure it. No changes are required in your present RCA Terra-Wave equipment. The 2-way feature is obtained merely by installing the new transmitter in each of your cars. Write for complete details and specifications of this second great RCA contribution to the speed and efficiency with which your department controls crime.

Sales and Service Representatives in Principal Cities

RCA TERRA-WAVE POLICE RADIO SYSTEM

RCA MANUFACTURING COMPANY, INC., CAMDEN, NEW JERSEY

(A Radio Corporation of America Subsidiary)

Pasadena, Calif.

Population	80,000
" served	92,000
Number of services	25,600
" " meters	25,600
" " hydrants	1,648
Miles of water main	327.0

For the purpose of establishing water rates, the area served by the Pasadena Water Department is divided into three classes: A, which includes all the area within the city of Pasadena; B, which includes territory lying within the limits of the city of San Marino and certain lands lying easterly and northerly of the city limits of the city of Pasadena, and territory within Nazarene University Park and other special parcels; C, all territory served by the Pasadena Water Department and not included in classes A or B.

All water for domestic use and for the irrigation of golf courses served in the area within Class A is subject to the following monthly charges:

⅝" meter for first	500 cu. ft. or less	$1.00
¾" " " "	500 " " " "	1.15
1" " " "	500 " " " "	1.40
1½" " " "	700 " " " "	2.10
2" " " "	1,000 " " " "	2.85
3" " " "	1,500 " " " "	5.60
4" " " "	2,000 " " " "	8.10
Water used in excess of minimum charge per 100 cu. ft.		.13

Water for domestic use and for the irrigation of golf courses in area B is subject to the following monthly charges:

⅝" meter for first	500 cu. ft. or less	$1.10
¾" " " "	500 " " " "	1.25
1" " " "	500 " " " "	1.55
1½" " " "	700 " " " "	2.30
2" " " "	1,000 " " " "	3.10
3" " " "	1,500 " " " "	6.10
4" " " "	2,000 " " " "	8.90
Water used in excess of minimum charge per 100 cu. ft.		.14

Water for domestic use and for the irrigation of golf courses in area C is subject to the following monthly charges:

400 cu. ft. or less	$1.10
From 400 cu. ft. to 2,000 cu. ft.	.23 per 100 cu. ft.
From 2,000 cu. ft. to 5,000 cu. ft.	.18 " " " "
All in excess of 5,000 cu. ft.	.14 " " " "

In areas A and B, there is a monthly service charge for irrigating service when the meters are paid for by the consumers, and this service charge applies whether water is used or not. The service charge for area A is as follows:

⅝" meters	$ .45
¾" "	.50
1" "	.60
1½" "	.85
2" "	1.10
3" "	1.85
4" "	2.35

For area B the schedule of service charges is as follows:

⅝" meters	$ .50
¾" "	.55
1" "	.65
1½" "	.95
2" "	1.20
3" "	2.10
4" "	2.60

For each 100 cu. ft. of water used through any irrigation service in the areas A or B, the charge is 6c. In areas A and B water used for irrigation purposes is measured by meters placed at the expense of the user but maintained by the Pasadena Water Department at its own expense.

For water used for irrigation purposes on area C, the following schedule applies:

1,000 cu. ft. or less	$1.60
From 1,000 cu. ft. to 10,000 cu. ft.	12 per 100 cu. ft.
All in excess of 10,000 cu. ft.	.10 " " " "

When irrigation and domestic water are furnished through the same meter, and the meter is furnished and installed at the expense of the consumer, an estimate is made by the Water Department of the quantity of water used for domestic purposes, which in no case is estimated as less than the regular domestic minimum, and the balance is charged at the regular irrigation rates. The Department may, however, require the consumer to install separate services and meters for the domestic and irrigating water at his own expense. Irrigation meters owned by consumers are considered to be in the possession of the Water Department as a pledge for prompt payment of all bills due.

When the Water Department has been notified in advance that a house or premises is to be vacant and a request has been made that water be left turned on for use on the lawn and grounds or for construction purposes, and only during the time that the premises are unoccupied, the following service charges are made:

⅝" meter	$ .50
¾" "	.65
1" "	1.00
1½" "	1.50
2" "	2.00
3" "	4.50
4" "	6.50

In addition to the above charges, all water registered by the meter is charged for at the rate established for the area in which the water is used.

Meter rates are due and payable when rendered and become delinquent 15 days thereafter. If delinquent bills are not paid upon presentation, the water service may be discontinued and will be turned on again only when all the charges are paid plus $1.00 for the cost of turning on.

Before water is supplied to any premises, the owner or user must make written application to the Water Department. The Department requires the following payment whether the service is within or outside the corporate limits of the city of Pasadena.

Up to and including ¾" service	$15.00
1" service	20.00
1½" "	35.00
2" "	45.00

Services larger than 2" and service enlargements are paid for by the consumer at cost exclusive of the meter.

There is no fire hydrant rental charge within the city, but outside the city the charge is $1.00 per month per hydrant. There is a fire hydrant service charge which requires that hydrants be placed, maintained, and repaired by the Water Department at cost plus 10% for administration. The cost is paid out of the general fund or any other fund specially appropriated for that purpose. Fire hydrant charge in San Marino is $2.00 per month per hydrant, but the Department maintains the fire hydrant without charge to that city.

Where pipes are provided for private fire protection, a charge is made for time and material plus 10% overhead, and this charge also includes the cost of a proportional meter if such is deemed necessary. The flat rates for private fire protection per month are as follows:

2" pipe or less	$ 1.10
3" "	1.60
4" "	2.10
6" "	4.10
8" "	6.60

M. S. JONES,
Assistant Engineer, Pasadena Water Department.

Sheboygan, Wis.

Population	40,000
" served	40,000
Number of services	10,730
" " meters	8,366
" " hydrants	901
Miles of water main	119.0

The net commercial and residential meter rates per quarter are:

First 600 cu. ft., min. charge per meter size.
Two or more families on one meter, additional minimum charge of 25c per quarter per family.

Next	5,400 cu. ft.	60 ..... 12c per 100 cu. ft.
"	54,000 " "	60 ..... 7c " " " "
"	450,000 " "	60 ..... 5c " " " "
Over	510,000 " "	60 ..... 3½c " " " "

The net industrial rates per month are:

First 200 cu. ft. min. charge per meter size.

Next	1,800 cu. ft.	60 ..... 12c per 1.00 cu. ft.
"	18,000 " "	60 ..... 7c " " " "
"	150,000 " "	60 ..... 5c " " " "
Over	170,000 " "	60 ..... 3½c " " " "

Monthly minimum charges are one-third of quarterly minimum charges.

The quarterly minimum charges are based on the size of the meter as follows:

⅝" meter minimum charge	$ 1.20
¾" " " "	1.50
1" " " "	2.40
1½" " " "	3.30
2" " " "	4.80
3" " " "	7.35
4" " " "	12.60
6" " " "	24.60
10" " " "	45.00

The city does not install services. The property owner pays for the installation of a service line from the tap in the main to the building.

The charge for water used for street flushing and city construction work as well as sewer flushing, and including the use of water for extinguishing fires and the cost of hydrant installations and maintenance, was $50,000 in 1934.

Private fire protection service is rendered on a flat-rate basis, the charge being $22.50 per year for each riser in a building to which fire hose lines are attached; and also $22.50 for each yard hydrant. Sprinkler service charges are 3¾c for each sprinkler per year, with the minimum charge based on an installation of 600 sprinklers.

ARTHUR H. MILLER,
Superintendent, Board of Water Commissioners.

Unbelievable ECONOMY

PUT a Diesel-powered McCormick-Deering TracTracTor on the job and we promise you RESULTS that will seem unbelievable *until we demonstrate the facts.* Furthermore, only this International Harvester product can produce them—for such reasons as these:

- Exclusive McCormick-Deering design makes TracTracTors by far the *most accessible, most easily serviced* crawler tractors on the market.
- McCormick-Deering patents in the application of the Diesel principle to McCormick-Deering power cover a number of features making for easy starting, lasting service, and remarkably efficient use of low-grade fuels. The Diesel TracTracTors *save from 65 to 70 per cent* of the cost of gasoline tractor operation.

We will be glad to give you evidence of what others are doing with McCormick-Deering Diesel power in many fields. Perhaps the solution of your power problem is here, in the complete range of McCormick-Deering wheel and crawler tractors and stationary power units. The 30-year experience of the world's largest tractor builder is at your service. Consult the nearest of our 170 McCormick-Deering industrial power distributors or International Harvester branches, or write for information.

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McCORMICK-DEERING DIESEL

Akron, Ohio

Population	255,000
" served	240,000
Number of services	53,800
" " meters	55,100
" " hydrants	5,176
Miles of water main	600.0

The quarterly rates charged for metered service are:

First	20,000 cu. ft.	$1.60	per 1,000
Next	20,000 " "	1.50	" "
"	20,000 " "	1.40	" "
"	20,000 " "	1.30	" "
"	920,000 " "	1.20	" "
"	4,000,000 " "	1.00	" "
"	5,000,000 " "	.80	" "
Over	10,000,000 " "	.60	" "

CONSOLIDATED BILLING

Each meter is considered a separate service in applying these rates, except that one consumer with several meters in the normal pressure district only may add together the consumption in excess of 80,000 cu. ft. quarterly through each meter to determine the quantities subject to the $1.20 and lower rates.

DISCOUNTS

When the consolidated quarterly billing is in excess of 15,000,000 cu. ft. the following discounts are allowed:

First	10,000,000 cu. ft.	none	
Next	5,000,000 " "	$ .15	per 1,000 cu. ft.
Over	15,000,000 " "	.375	" " "

Minimum meter rates are charged according to the size of the meter, as follows:

5/8" meter	$1.00 per mo.
3/4" "	2.00 " "
1" "	3.00 " "
1 1/2" "	4.00 " "
2" "	5.00 " "
3" "	7.00 " "
4" "	10.00 " "
6" "	15.00 " "
8" "	25.00 " "
10" "	40.00 " "

The rates for fire protection services are based on the size of the service connection or meter as follows:

Size of Line or Meter	Meter Owned by Consumer	Unmetered Service
2"	$2.00	$8.00
3"	3.00	12.00
4"	4.00	16.00
6"	6.00	24.00
8"	10.00	40.00
10"	15.00	60.00

Installations having detector check valves are billed as an unmetered service.

W. R. LaDue,
Acting Superintendent.

South Gate, Calif.

Population	19,500
" served	15,000
Number of services	3,756
" " meters	3,756
" " hydrants	875
Miles of water main	150.0

The monthly water meter rates are:

Minimum charge (allowing 1,000 cu. ft.)		$0.90	
1,000 to 2,000 cu. ft.		90	per 1,000 cu. ft.
2,000 " 3,000 "	"	70	" " " "
3,000 " 4,000 "	"	70	" " " "
4,000 and all over		50	" " " "

The charges for the installation of services are:

5/8" complete with meter	$10.00
1" " " "	35.00
1 1/2" " " "	65.00
2" " " "	86.00

Public fire hydrants are furnished free by the Water Department, while fire hydrant service on private grounds is provided at $1 per hydrant per month. The cost of a 6" service for an automatic fire sprinkler line is $5 per month and for an 8" service, $6 per month.

Louis M. Rothkranz,
Water Superintendent.

Bloomington, Ind.

Population	18,200
" served	17,000
Number of services	4,650
" " meters	4,650
" " hydrants	321
Miles of water main	54.0

The water rates for the city of Bloomington, Ind., are as follows:

First	2,000 gals.	$ .40
Next	3,000 "	.35
"	5,000 "	.30
"	10,000 "	.25
"	30,000 "	.20
"	50,000 "	.15
"	100,000 "	.12
"	150,000 "	.09
"	250,000 "	.08
Over	600,000 "	.075

SPECIAL RATES

Churches	$	.10	per 1,000 gals.
Schools		.08	" " "
Cemetery		.08	" " "
Railroads (for tanks)		.08	" " "
City Building		.08	" " "

MINIMUM MONTHLY RATES

5/8" or 3/4" meter	$ .60
1" "	1.50
1 1/2" "	2.00
2" "	4.00
3" "	5.00
4" "	8.50

There is a 10% penalty added if the water bill is not paid by the 10th of the month.

The city water works installs and maintains all service lines from the main to the property line. All replacements and new services are installed with copper pipe, corporation cock, curb cock, curb box and fittings, all furnished by the city, and the lines laid not less than 30" deep. Meter settings are made by the city water works with yokes, 18" tile and cast iron covers, and the meter is furnished free. A $3.00 deposit is required on all rented properties, but no charge is made to owners of property.

There are 320 fire hydrants in Bloomington, for which the city pays the Water Department $5,000 per year. There are no private sprinkler charges.

F. C. Dillman,
Superintendent, City Water Works.

Monrovia, Calif.

Population (1930 census)	10,800
" served " "	10,800
Number of services	3,888
" " meters	3,888
" " hydrants	434
Miles of water main	120.0

The meter rates are:

800 cu. ft.	$1.00	
2,000 " "	1.40	
All over 2,800 " "	5c	per 100 cu. ft.

Irrigation water is furnished to about 90 consumers at 3c per miner's inch-hour over weirs. All domestic services are metered. Consumers pay a service charge based on the size of the meter, as follows:

3/4" or 5/8" meter	$22.00
1" "	37.00
1 1/2" "	65.00
2" "	95.00

The meters are the property of the city.

The Water Department receives $535 annually from the Street Department for all the water used by that Department during the year. The Fire Department pays $100 per year for water used in fire stations and for the extinguishing of fires.

C. W. Given,
Water Superintendent, Public Service Department.

Denison, Texas

Population	13,000
" served	15,000
Number of services	3,203
" " meters	3,203
" " hydrants	264
Miles of water main	34.0

The water rates are:

First	1,000 gals.	@	$ 1.00
Next	4,000 "	@	.25
"	5,000 "	@	.20
"	100,000 "	@	.17 1/2
All over	100,000 "	@	.12 1/2

A special residential summer rate has been established as follows:

First	1,000 gals.	@	$ 1.00
Next	2,000 "	@	.15
All over	2,000 "	@	.10

The regular water rates and residential summer rates are doubled for service outside the city limits. These rates apply to all consumers except railroads, which pay 8 1/2c per 1,000 gals.

A cash deposit of $3 per meter within the city limits and $5 outside is required of each consumer. The meter and service to the meter are installed by the city at no cost to the consumer.

There is no charge for public fire hydrants and no charge for private fire hydrants or sprinklers except that the consumer pays for the entire installation.

A. M. Brenneke,
City Engineer.

Huntington Park, Calif.

Population (estimated)	30,000
" served (estimated)	26,000
Number of services	4,600
" " meters	4,600
" " hydrants	450
Miles of water main	55.0

The water rate in Huntington Park is 80c for 1,000 cu. ft., this being the minimum charge. All additional water used is charged at 7c per 100 cu. ft. There is on special irrigation rate.

The installation cost of a service with a 5/8" meter is $13.00; a service with a 1" meter, $20.30; and with a 2" meter, $50.00; $31.70 for 1 1/2" meter.

There is no hydrant rental or sprinkler charge and no charge is made to the Park Department for irrigation.

Vaughn Wood,
City Engineer and Water Superintendent.

Skidding Weather BUT ..this Bridge deck is SAFE

It is floored with J-M Mineral-Surfaced, the plank with a traction equal to concrete ... the plank that's strong but light, resilient, durable ... virtually weather- and wear-proof

GLANCE at the small photograph to the right. See those pieces of coarse trap rock? *They're in to stay*. Embedded under great hydraulic pressure, they are *permanently* interlocked with the fibrous asphaltic body of the plank.

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Weight? In the one-inch thickness, it weighs only 9 lb. per sq. ft. **Heavy traffic flow?** It is strong, durable, practically wear-proof. Will not warp, crack, splinter or decay. Resilient, it is unharmed by vibration or deflection. **Severe weather conditions?** Special asphalt and fibre content prevents brittleness in cold weather; it will not disintegrate under frost action. **Unskilled labor?** Local crews install it easily, quickly and with entire satisfaction. **Maintenance of traffic flow?** It is ready for duty the moment it is laid. Frequently, traffic is continued during application.

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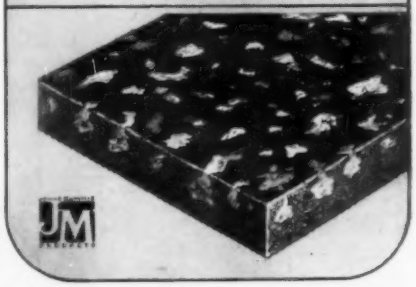

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AC-5A-35

TRAFFIC CONTROL AND FACILITATION

Conducted by Publications Committee, Institute of Traffic Engineers, 175 Fifth Ave., New York

Paul L. Green, Chairman; Melvin J. Bankhead, James R. Guthrie, T. T. McCrosky, D. Grant Mickle, Robert A. Mitchell, Edward J. O'Meara, Miss I. K. Rolph, Peter J. Stupka, J. C. Vincent, John C. Wrighton

The Hazard of Driving and Walking

Analysis of Motor-Vehicle Accidents and Fatalities

MANY agencies, up to the President, are exercised over the fact that about 36,000 persons were killed by motor vehicles in 1934. These deaths, according to The Travelers Insurance Co., occurred in 882,000 accidents.

What are the major facts? The remedies are more or less obvious; how to administer them will be discussed later.

Collisions are of course, the deciding fact in automobile accidents. There were 337,810 collisions with pedestrians, and 381,910 with other cars. These account for 83 per cent of the accidents and for 68 per cent of the deaths. The third most serious collision factor is the fixed object, killing 4,140 or 11½ per cent of the total. What is the remedy? For the driver: Go slow, have your brakes in order, be alert. For the pedestrian: Be alert and patient. These measures are difficult enough to achieve; but what of the child who suddenly appears out of nowhere, rising from a roadside ditch or darting from behind a tree, and runs across the road in the path of a car going 25 miles an hour? Or of the boy on a bicycle who sails out of a side street reading a book? Four per cent of the deaths were children up to 4 years old, 11 per cent were 5-14 years old. The remedy is home supervision, and instruction by parents, guardians, teachers, movies and radio.

Of the 882,000 accidents, 123,980 are ascribed to exceeding the speed limit. These cars were not necessarily speeding in the sense of moving at excessive speed; for the speed limit might have been 20 miles an hour. This is only 14 per cent; but 26 per cent of the deaths fall in this classification. The remedy is: Observe the speed limit and be alert—driver and pedestrian. Other serious mistakes of drivers were: (1) did not have right-of-way; (2) drove off the roadway; (3) reckless driving; (4) cutting in. The remedy is to drive properly, which means to know the rules, be considerate of others, be alert, keep the tail of your eye on the driving around you, give way to hogs, drunks and tyros.

Pedestrians caused 286,000 of the 882,000 accidents and 15,950 of them were killed. The remedies are not to cross against the signal nor diagonally nor between intersections; be vigilant when coming from behind a parked car and when walking on a highway and when playing in the street.

There were 1,268,300 vehicles involved in accidents. Of these, 94 per cent were apparently in good condition; 6 per cent obviously were not. The defects, in order of fatalities, were weak brakes, glaring headlights, no chains, one or both headlights out, puncture or blowout, taillight not visible. All these defects are known to a driver. The remedy is to keep the car in condition. Cars with two-wheel brakes were only 12 per cent of the total, but they killed 18 per cent. The remedy here is to wait for replacement.

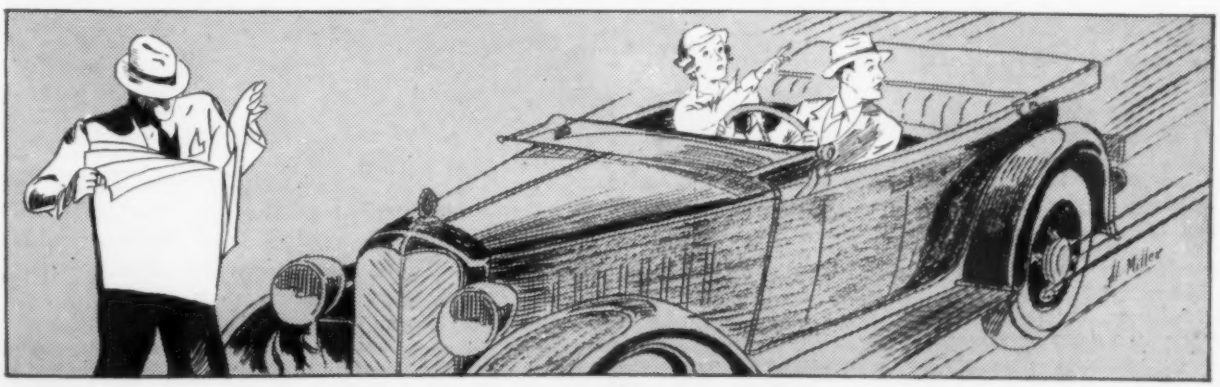
If it all were to be done over again, it is probable that no grade crossing would be permitted. This would most certainly be so in the case of railroad crossings and, in fact, is going to be done, although only 3 per cent of all fatalities occur at these notoriously hazardous spots. The highways would be freeways and steady-flow thoroughfares, with cross streets staggered or with center islands that compelled right turns onto the highway and travel of half a block before pulling into an open space between the islands opposite the cross street at the left. Highway work of the future will doubtless include considerable of this type of construction. The most difficult problem is the city street. The remedy is vigorous policing aimed to make stop-and-go signals mean exactly what they say, adequate signals that are simple and not too long on the red in congested districts, wide vivid white stripes on the roadway that makes the dullest and most inverted intellect know when it is on the wrong side of the line, and safe vehicle speeds in these districts.

Street and highway lighting are so necessary to safety at night that they need not be mentioned except for the fact that street lighting is usually poorly designed and under-powered, while highway lighting frequently does not exist at all. The heavy slaughter starts at 4 P.M. and continues until 6 A.M.—25,630 persons being sacrificed during these 14 hours. Yet traffic is much heavier in the daytime. The fault, of course, is not due entirely to inadequate lighting but also to the fact that the work of the day is over and many hurried and tired people are abroad. But the authorities can hardly be expected to provide rest and comfort. The one thing they can do is to furnish good lighting. The mercury-vapor and sodium-vapor demonstrations dotted here and there indicate future possibilities.

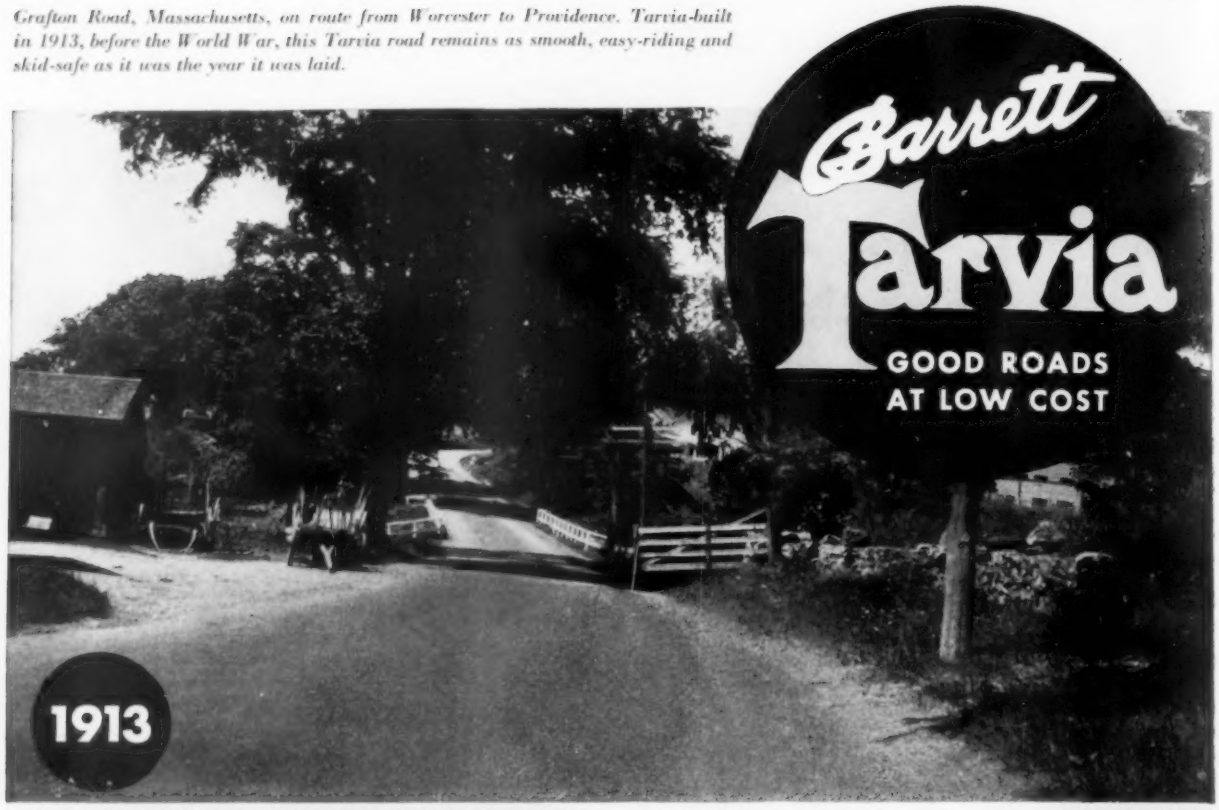
Ninety-two per cent of all drivers involved in both accidents and fatalities had one year or more of driving experience. Only 1 per cent were unlicensed, but they were involved in 2 per cent of the deaths.

Eighty-five per cent of the accidents occurred in clear weather, and 75 per cent of them on dry surfaces.

Some of the obvious remedies can be



Grafton Road, Massachusetts, on route from Worcester to Providence. Tarvia-built in 1913, before the World War, this Tarvia road remains as smooth, easy-riding and skid-safe as it was the year it was laid.



To road officials and highway engineers traffic-safety of a road is equally as important as its durability and low cost. Tarvia roads qualify on all counts. Tarvia penetrates deeply into the road crust, holding the stone or gravel firmly exposed on the road surface. The resulting slightly granular surface, which is characteristic of Tarvia road types, provides an effectual tread-hold for automobile tires. Let the Tarvia field man help you provide *safe* roads.

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applied by the mere expenditure of money, though this is a difficult enough process at this time. These include adequate policing that will watch speeds, pedestrians and intersections; snappy markings and signals; better street and highway lighting; maintenance of cars in safe condition, by compulsory inspection if necessary. This last factor, as is well-known, is being widely discussed at the present time, and several cities and states are practicing it in the only practicable manner—through publicly owned bureaus. But it is universally recognized that the car is a negligible factor compared with the driver and the hosts of pedestrians, and that the bureau should be a handle with which to get hold of the driver, size him up, give him pointers, make him think.

Knowledge of the rules of the road, realization of the stealth and ease with which accidents happen, the necessity for being on the lookout for what the other drivers and the eternal pedestrians will do, all these can be instilled into the drivers who bring their cars for inspection. This can also be accomplished to a degree by radio and movies.

Alertness, vigilance, attention, comprice the quality of being fully alive. They cannot be instilled into a man; but the fact that he may be deficient in these primary faculties can be brought home to him by a few questions demanding observation and mental agility.

Everybody will concede that 36,000 traffic deaths are a great many. But is the figure out of proportion to the hazard? How much more is it than in other years when all the factors are taken into consideration? If there was an increase in the number of accidents, there was also an increase in the consumption of gasoline. There were also a million more cars registered than in 1933.

In the ten years 1925-34 the death rates per 1,000 vehicles registered were 1.10, 107, 1.11, 1.14, 1.18, 1.24, 1.30, 1.22, 1.31, 1.43.

The rate appears to be rising in the face of widespread and increasing consideration given the traffic problem. It is hardly fair to say that the index to results in traffic engineering is the death rate; for the traffic engineer cannot be held responsible for the quirks of human beings awheel and afoot, nor for the many seemingly inevitable accidents. While theories are evolving into sound methods and these methods are being applied, the old commandments stand: Better streets and freeways, wide, modern design, even-surfaced, plainly marked and with the right signals where they belong, visibility by night, steady-flowing traffic facilitated as well as controlled by the weaving motorcycle cop who can get through the traffic sieve.

That Troublesome Matter—Parking

THE problem confronting the officials of any municipality, particularly the capital of a state or a county-seat, with reference to parking, is difficult. No other subject brings up so much argument with so many opinions. It is essential to the welfare of the city, its merchants and citizens, and to the good reputation which it must bear, that visitors be treated with every courtesy and consideration. Nothing is so full of trouble for local officials as discourteous or inconsiderate treatment of parking violators, particularly non-residents.

Every inch of parking space on the streets must be made available with the fewest possible restrictions. At the same time there must be free movement for heavy volumes of through traffic with the least congestion and inconvenience to everyone concerned. Emergencies may call for the swift passing of fire apparatus or ambulances through crowded sections of the city. The safety of pedestrians and vehicle traffic alike demands orderly and considerate parking regulations and adequate observance of them.

Restrictions to parking may take one of two forms: limitation or prohibition. Limitation of parking is based on the business needs of a congested area to permit a greater number of motorists to enter the business area, stop at the curb, transact business and get away, or to stop all-day or all-night parking. Prohibition of parking is based upon the need of the full street width to provide lanes for the free movement of vehicles.

Limitation most frequently provides for one-hour parking. Sometimes two-hour parking is considered, and on special streets for short distances 30-minute or 15-minute parking may be found necessary. Probably the easiest limit to enforce is the one-hour. A single officer may then patrol three or four blocks and by observing license numbers or marking tires with chalk can readily enforce the one-hour limit.

It is easy to learn the parking habits of any business area by having some one walk the length of one or two blocks on each side of the street every 15 minutes, making note of the license numbers of vehicles parked at the curb in the order in which they are parked. Such a study may be made in the morning or in the middle of the afternoon when business conditions are at their peak. At the same time the observer may note any other parking habits that have a bad effect upon the free movement of traffic, i.e., double parking, angle parking where not permitted, parking too far from curb.

On the average street, vehicles should be parked parallel to the curb with the wheels on the side nearest the sidewalk not more than 6 inches from the curb. If placed in that manner, the average vehicle will occupy a space about 6 feet wide and 15 feet in length. Therefore, parking limit lines, if painted on the pavement, should be not more than 6 feet from the curb lines. Vehicles parked parallel to the curb require a distance between them of probably 3 feet. The total length of curb required for each parked vehicle will approximate 18 feet.

Angle parking requires greater width of street than parallel parking, about 15 feet, and also requires additional width to permit vehicles to enter and leave the parking spaces. It has the advantage of providing space for more vehicles in a given block. If a street is of such width that at least two free lanes of not less than 10 feet are available and the needs for moving vehicles do not demand a third or fourth lane, then angle parking may be permitted.

The question as to whether or not vehicles parked at an angle should head in or back in practically answers itself in favor of head-in parking.

Abuses of parking privilege through negligence or carelessness of the operator consist of parking at slight angle to to the curb where parallel parking is required; facing in the wrong direction; double parking; parking too close to an intersection or in front of a fire-plug or a theater. Most of these abuses are indications of the need for additional parking space for the customers of business houses.

No street upon which parking is limited or prohibited should be without at least two signs on each side of the street in every block, briefly stating the parking regulations.

Merchants and business men on a congested street may make additional curb space available for their customers by requiring that their employees' cars be placed in parking lots or on some streets not so crowded. In some communities chambers of commerce, business men's associations, service clubs or others have provided free parking lots.

Prohibition of parking is seldom a necessity in the average small community. Only at a few locations where narrow streets create a "bottle-neck" and the flow of traffic is exceptionally heavy, perhaps only at certain hours of the day, may absolute prohibition of parking be necessary. Such a condition should receive careful study before prohibited parking is tried, as the difficulty of enforcement is so great as to be beyond the powers of a small police department.

—From the report of the Highway Research Board's Sub-Committee on Traffic Relations in Municipalities; continued from the February issue.

The London Silence

THE Minister of Transport in London recently issued a regulation to prohibit the use of audible signals on motor vehicles after 11:30 P. M. until 7 A. M. each day. The results are remarkable in that there have been only a few minor prosecutions, and in almost every case the defendant has been dismissed with a caution, since it was proved that the signal had been given more out of habit than anything else. Some automobile manufacturers have fitted a control switch which disconnects the horn, so that if the driver inadvertently pressed the push, he would not commit an offence.

AN IMPROVED TECHNIQUE
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4 Note the cleanness of the surface (magnified section) of this finished job and the excellent anti-skid value thus obtained.

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What County Parks Should Be

By **L. C. PALMER**
Forester, Kent County Road Commission, Michigan

THE ideal county park is large enough to have a developed or landscaped area as well as areas in their natural state. This condition is practically impossible to attain with less than 160 acres.

County parks should not be imitations of city parks unless in metropolitan areas. They should provide attractive natural scenery, and in addition should have plenty of outdoor play room, and places for assembly of large gatherings, as well as restful recreation for small groups and individuals. They should be plentifully supplied with benches, tables and fireplaces or picnic stoves, where meals can be cooked and served, meadow room for games of all descriptions, hill and valley trails for hiking, and good water for bathing and canoeing. A shelter should be furnished against sudden summer storms and also for use as an assembly place for skating, sledding, tobogganing and snowshoe parties in winter. Besides natural fitness and scenic advantages, county parks should have a good supply of drinking water, and plenty of sanitary conveniences.

There are several types of county parks found in the various sections of the country, ranging to 5,000 acres and more:

1. The first type, from 25 to 100 acres, is generally located in metropolitan districts, providing playground, ball fields, and a variety of other recreational facilities. It has wooded or open areas that serve many functions of the neighborhood play field.

2. This type varies in area from 150 to 500 acres, and is generally located outside city limits. It may provide a playground and ball field, but is primarily for picnicking, organized and tourist camping, winter sports, nature study, and, if there is a stream or lake, for boating and swimming. A golf course is sometimes laid out. Many such park sites are selected especially for their scenic or natural features.

3. The third type is found in several of the larger county park systems, and is the outlying reservation of 500 to 5,000 acres. Their purpose is to preserve for the people woodlands and other areas of natural beauty which can be developed for camping, picnicking, nature study, horseback riding, winter and water sports. So far as possible, the reservation is kept in its natural state.

4. Several of the larger county park systems have parkways, in many cases connecting the several parks of the county, and serving primarily as pleasure drives from the city to the surrounding county. These parkways often follow the course of streams and serve to protect their natural beauty and prevent pollution. They vary in width from 200 to 1,000 feet or more, providing space which can be developed into recreational areas. For a county with unlimited funds, the parkway is an ideal way to connect the various units of a park system. But as a parkway system entails the expenditure of large sums of money, this type of park will for years to come be used only in the wealthier counties immediately adjacent to the larger cities.

5. The rural park's function is to provide outdoor recreational facilities for the people of the county. In many sparsely populated counties, owing to the limited resources of the smaller communities, there are very few municipal parks available for the use of the people; therefore, one or more parks have been provided by the county. These are used for outings and picnics, and are generally equipped with ball fields and playground apparatus. They also provide facilities for camping, boating and swimming. Many tourist camps are developed in this type of park.

It is always important that county parks be not improved or developed too intensively. Wherever possible, in Kent County, we try to keep them in their natural state. The first step in the development of a county park is to become well acquainted with the site. Prospective roads should be located, picnic sites and playgrounds should be selected, locations of shelter houses, toilets and tool buildings should be determined.

Play areas should be nearby or adjacent to picnic areas. They should contain sufficient space for an indoor ball diamond, children's playground apparatus, horseshoe courts, and other means of recreation. Outdoor baseball diamonds are often of necessity located some distance from the picnic areas. The location of buildings is largely dependent on their use. Shelter houses should be easily available from the picnic areas, and should be placed where there is a particularly scenic view. Toilet buildings should be accessible, and if not modern in type should be placed where they are not in view. Tool houses should be out of the way for those using the park, yet easily available to the employees of the park. They should be close or adjacent to the drive.

If picnic areas are kept clean by the park officials, no signs are necessary.

Sprinkling System Pays for Itself

Cleanliness pays big dividends, and is appreciated by every one. Intensively used picnic areas are damaged greatly. The grass is trampled on so much that it finally disappears, and the places become dusty and dirty. In one of the Kent County parks which was so intensively used that considerable damage was being done to both grass and trees, it was necessary to install a sprinkling system, which has more than paid for itself by enabling us to sprinkle the picnic and plaground areas and keep them in good condition. If a park is located on a stream or lake and electricity is available, a sprinkling system can be installed at comparatively low cost. We use centrifugal pumps, and pump direct, with no storage tanks. The average cost of the sprinkling systems in the four parks is less than $50 per month for the summer months.

In the maintenance of county parks, it is well to have a caretaker in charge who is a "Jack-of-all-trades." Too many who apply for the position of park caretaker think that the life is one of pleasure and ease with nothing to do but sit around and bask in the sunlight or shade.

There is one criticism I believe well deserves the thought of all those who have the administration of park property, and that is the matter of too many signs. If one-half of the signs in some parks were removed and then half of the remainder, there would still be a great plenty. Not one individual in a hundred takes time to read these rules and regulations, and I firmly believe that 99 9/10 of the people who use our parks do so without thought of violating any decent precedent or causing any damage. I do believe there should be a few well-placed signs harmonizing with their surroundings. At present all our new signs are being made of oak with broken ends, shellacked and varnished, and sassafras used for the lettering.

Concessions

Concessions, to my mind, are an evil which it is necessary for any park executive to face. It has always been our aim to keep the parks from being commercialized, for we realize that most people who attend them do so because it will cost very little, and temptations for spending money should be minimized. We allow concessions in the parks only for our own protection. Before we had concessions, the parks were surrounded by popcorn wagons and vendors of refreshments. Also, efforts were made to purchase ground immediately adjacent to the parks for concessions, so, to protect ourselves we allowed concessions to come into the parks. Where concessions are allowed, they should be very closely regulated, and allowed to handle only merchandise for which there is demand, such as ice cream, pop, candy, picnic supplies, groceries, and sandwiches.

The financing of improvement and maintenance is a problem which must be solved soon if parks are to be kept open. Since the passing of the 15-mill tax limitation in Michigan, and in some of the larger cities of the state, the park activities of many communities must necessarily be considerably curtailed. During these times it is important that park properties of all types should be available to their fullest extent. Unless other means are found for financing park maintenance and improvement, it may be necessary to charge a fee to those who use the parks, which I believe is not a very desirable method.

—From a paper presented at the 1935 meeting of the Michigan Association of Municipal, County and Public Utility Foresters.

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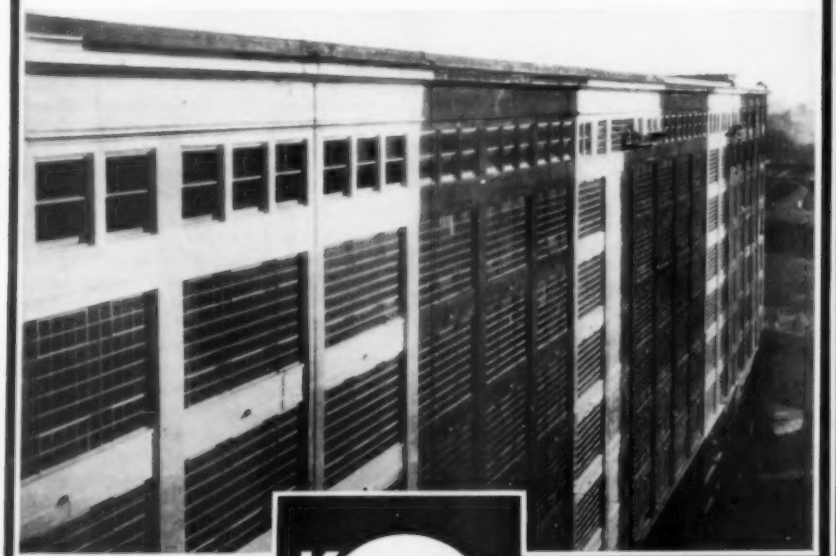
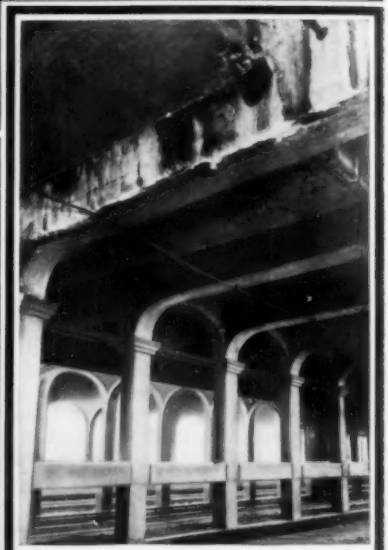
There are thousands of miles of slippery highways in this country which can be made safe and non-skid by a surface treatment with Tar. We can give you complete instructions for doing this work with Tarmac. The road shown in the above photograph was being treated with Tarmac for that purpose when this photograph was taken.

Hundreds of roofs have failed in the manner shown in this photograph. This damage can be prevented by the use of coal tar pitch and felt. Send for the folder "Roofing Do's and Dont's" which explains the causes of this problem.

Concrete structures which are weathering may be saved from further damage with Koppers Lumino (tar-base aluminum paint). The photograph shows a large building being painted with Lumino to stop weathering.





Serious failures of concrete and masonry structures have been occurring because they were not waterproofed, or because the wrong type of waterproofing was used. The bridge shown in this photograph has been badly damaged because the waterproofing failed. Send for Sweet's reprint which tells how waterproofing should be done and why coal tar pitch prevents damage.

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Triangular Highway Structure Urged for Nation Plan

WHEN Cyrus Kehr in the early 20's wrote, and in 1926 the American Branch of the Oxford University Press published, the book entitled "A Nation Plan, a Basis for Coordinated Physical Development of the United States of America," many there were who regarded the author as visionary rather than as a man of vision. But when President Roosevelt appointed in 1933 the National Planning Board, and when the work of that body was broadened in 1934, under its new name of National Resources Board, respect for the man of vision grew apace.

Mr. Kehr has now added to his earlier work a privately printed 48-page "Supplement to A Nation Plan," in which major emphasis is given to the need for providing every place in the nation with the best possible communication with every other place in the nation. One of the brief chapters of the new monograph, with its accompanying drawing, is here reproduced:

What the Nation Plan Will Include

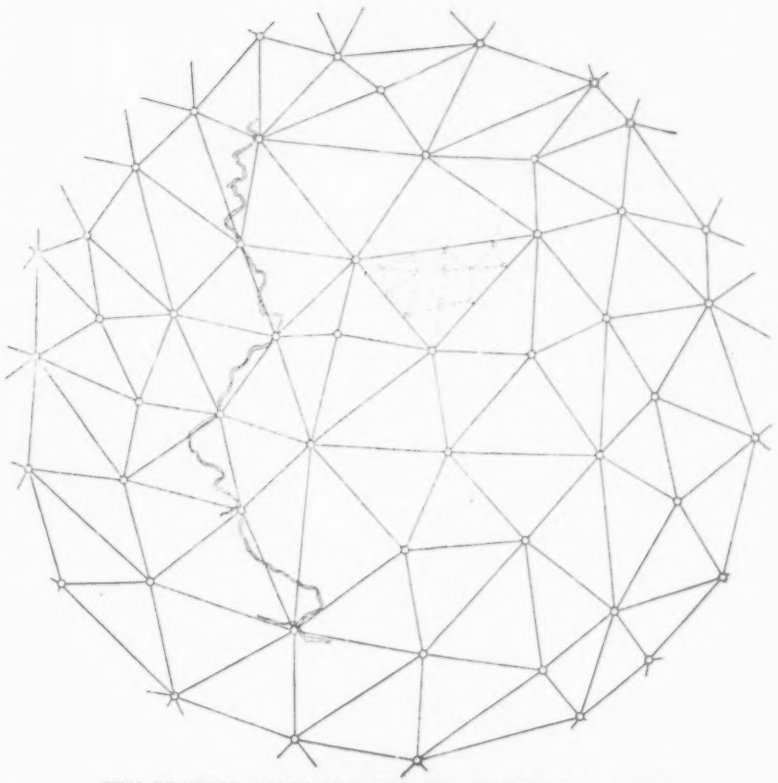
"Broadly speaking, the Nation Plan will consist primarily of a network of major transportation and communication trunk lines and belt lines arranged to form triangles, the trunk lines and the belt lines being joined at the centers at which corners of the triangles meet, the sides of the triangles ranging in length from approximately 50 to 300 miles, deviating from straight lines only as land contour requires, each triangle side including a railway trunk line and a superhighway joined, respectively, at the corners of the triangles to railway and highway belt lines. Over the entire country, the spaces enclosed by the sides of the triangles and enclosed or partially enclosed by the belt lines, will be areas to be treated by local planning under local authority, separately from, but in relation to, adjacent parts of the Nation Plan.

"The larger transportation factors, the railways and the super-highways along the triangle sides and the belt lines joining the sides, will be the main factors of the super-transportation system extending, in network form, over the entire nation and affording the best possible means for transportation and communication throughout the nation.

"In addition to the trunk line railroad and the super-highway, a waterway for transportation is to form a part of a side of a triangle (when available).

"And an electricity transmission trunk line is to form a part of each triangle side; and at every center an electricity transmission belt line will connect the transmission lines leading to that center. This triangular network of electricity transmission trunk lines can receive electric current from power plants located anywhere in the country.

"The sides of the triangles are also to include telegraph and telephone trunk lines, connecting with corresponding belt lines at the centers.



THIS DRAWING SHOWS HOW THE TRIANGULAR PLAN STRUCTURE PROVIDES EASIEST COMMUNICATION BETWEEN ANY PLACE AND ANY OTHER PLACE REGARDLESS OF THE POINTS OF THE COMPASS, A RESULT WHICH CANNOT BE ATTAINED BY ANY OTHER PLAN

"Gas and oil transportation pipe lines may be placed on the sides of all the triangles and joined to corresponding pipe belt lines at the centers.

"Thus it will be seen that preparing the Nation Plan, merely as a guide toward construction, will not be a stupendous task requiring a lapse of many years. Construction according to the Plan will come later; that, in the aggregate, extending through many years, will be a large task."

Recent City Manager Appointments

W. E. BRACKETT, former City Manager at Rumford, Maine, has been appointed City Manager of Oakland, Maine, which has recently adopted the state enabling act providing for a manager.

John T. Hamill, Manager of Norman, Okla., from 1927 to 1931, succeeds Earl J. Geddes as City Manager of Guthrie, Okla.

Ira K. Fuller, of St. Albans, became City Manager of Troy, Vt., on April 1. Troy recently adopted the manager plan of government.

Hal Moseley, former Commissioner of Public Works, will become City Manager of Dallas, Texas, on May 1. He succeeds John N. Edy, who has resigned.

A. F. Newman, former City Clerk, was appointed City Manager of Decatur, Ga., on March 21. He fills the vacancy created by the resignation of R. M. Abernathy last January.

CLARENCE E. RIDLEY,
Executive Director, International City Managers' Association.

HYDRAULIC CONTROL SAVES 68 WEARING POINTS

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Hydraulic controls as worked out by Austin-Western bring blade lift, reverse and side shift into better responsiveness to the operator in the cab. They also give the operator a clearer view of the roadway and his blade. Because operation is easier, careful finishing is not shirked. No lost motion with its resultant blade chatter. No power loss from turning over of control gears. A relief valve insures the machine against breakage by a green operator.

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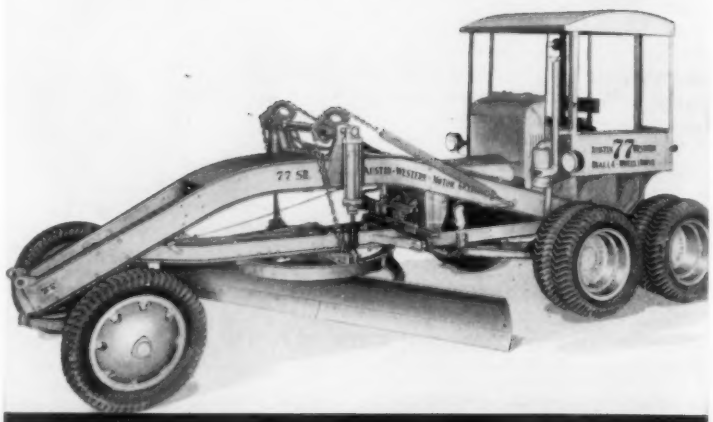
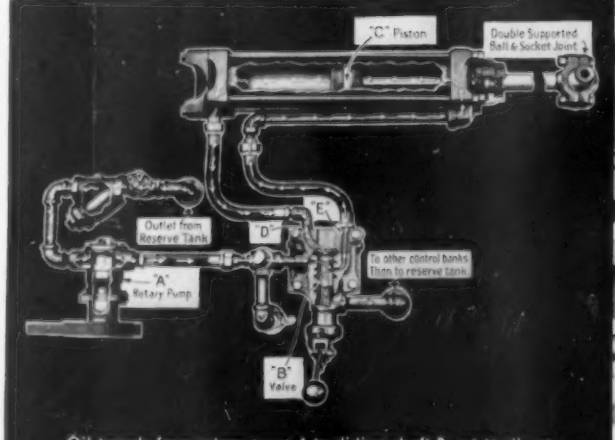
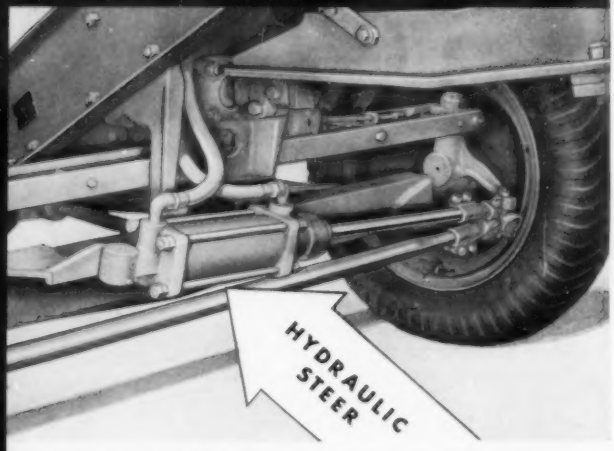


AUSTIN-WESTERN 77 MOTOR GRADER



Oil travels from rotary pump A to sliding shaft B, set to divert the oil into the right hand side of the cylinder, above, causing the piston C to move to the left. Movement forces the oil on left of piston to return to valve B. Valve may be shifted to reverse the flow or placed in neutral, locking the oil on either side of the piston at D and E. When flow is stopped at these points a firm wall of oil holds the piston in a vise-like grip, while oil from pump continues to flow freely through the valve.



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Types of Local Projects Receiving PWA Aid

NON-FEDERAL projects to the number of 3,977—completed, under construction or authorized—with total allotments of $747,757,079, are listed by Administrator Ickes in a report to the country last month on PWA's accomplishments to April 1, 1935. Of these projects, 1,173 are completed, 1,458 under construction, 222 under contract and 260 advertised for bids; the remaining 670 allotments being in preliminary stages of Federal or local action.

From the complete list of 3,977 allotments, THE AMERICAN CITY has made the following tabulation of the various types of projects with the total number of each. The number of projects under certain general heads, such as Public Buildings, Water Works, etc., is in addition to the number of allied projects classified under various specific heads.

Abattoirs, 3
Administration Buildings, 7
Agricultural Building, 1
Airports, 6
Alley, 1
Almshouses, 5
Approach, 1
Archives, 1
Armories, 10
Art Museum, 1
Arts Buildings, 7
Assembly Hall, 1
Asylums, 2
Auditoriums, 21
Auditorium-Gymnasiums, 29
Auditorium-Library, 1

Barns, 2
Barracks, 1
Bath Beach, 1
Bell Tower, 1
Biology Laboratory, 1
Boardwalk, 1
Boys' Home, 1
Bridges, 104
Building Repairs, 11

Canals, 3
Capitol Annex, 1
Car line, 1
Cemeteries, 2
Colleges, 9
Comfort Station, 1
Community Center, 1
Cottage, 1
County Homes, 3
Creamery, 1
Culverts, 3
Curbs, 2

Dams, 7
Dam Canal, 1
Detention Buildings, 3
Dining Hall, 1
Disposal Plants, 141
Docks, 5
Dormitories, 60
Drainage, 14

Economics Building, 1
Electric Cable, 1
Electricity Distribution, 14
Electric Plants, 57
Engineering House, 1
Equipment Buildings, 3

Faculty Restaurant, 1
Fence, 1
Filtration Plants, 35
Fire Alarms, 5
Fire Exit, 1
Fire-Police Stations, 3
Fire Protection, 6
Fire Stations, 21
Flood Control, 2

Garbage Disposal, 3
Gas Distribution, 6
Gas Main, 1
Gas Plants, 5
Golf Course, 1
Guard-Rail, 1
Gymnasiums, 17

Hangars, 2
Harbor Improvements, 5
Harbor Railroad, 1
Health Buildings, 3
Heating Plants, 13
Highway Protection, 1
Highway Railway Crossings, 10
Highways, 257
Home for Aged, 1
Horse Barns, 2
Hospitals, 117
Housing, 6
Hydrant, 1

Incinerators, 10
Industrial Buildings, 2
Infirmaries, 2
Irrigation, 11
Irrigation Canals, 3
Irrigation Dams, 2

Juvenile Court, 1

Laboratory, 1
Laundries, 3
Levees, 3
Libraries, 20
Locker Room, 1

Machine Shop, 1
Markets, 7
Mausoleum, 1
Medical Buildings, 2
Memorials, 4
Municipal Park, 1
Museum, 1

Nurses Homes, 4

Park Developments, 16
Passageway, 1
Physics Building, 1
Piers, 4
Police Communication, 1
Police Stations, 5
Poor Farm, 1
Power Canal, 1
Prisons, 32
Public Buildings, 135
Pump Plants, 6
Pump Station, 1
Pump Tank, 1

Railroad Bridge, 1
Railway Highway Crossings, 2
Rapid Transit, 1
Record Building, 1
Recreation Hall, 1
Reformatories, 2
Refrigerator Plants, 2
Reservoirs, 34
Residence, 1

Sanitarium, 1
School Busses, 3
School Garage, 1
Schools, 773
Science Building, 1
Sea-Wall, 5
Service Buildings, 3
Sewers, 479
Ship Canal, 1
Ship Channels, 2
Shops, 2
Sidewalks, 9
Smoke Stack, 1
Sprinklers, 4
Stadiums, 7
Staff Houses, 2
State Building, 1
State Institution, 1
Stock Barns, 3
Storehouses, 10
Street Lights, 7
Streets, 231
Student Club, 1
Sub. Station, 1
Subways, 2
Swimming Pools, 15

Terminal, 1
Toll Bridges, 10
Town Halls, 8
Transit Line, 1
Tunnel, 1

University Buildings, 6

Various, 158
Viaducts, 7

Ward Buildings, 3
Warehouses, 6
Water Mains, 120
Water Meters, 2
Water Power, 12
Water Tanks, 23
Water Works, 715
Wells, 10
Wharves, 8

Yacht Harbors, 2

Progress made on emergency construction of public works highways to April 13 under the supervision of the U. S. Bureau of Public Roads shows a total of 531 projects, estimated to cost $21,918,000, approved but contracts not yet awarded; 899 projects, estimated to cost $28,082,000, awarded but not yet under construction; 3,183 projects, estimated to cost $180,645,000, under construction; and 8,019 projects completed at a cost of approximately $355,165,000.

The 3,183 projects under construction involve 8,368 miles of road and are giving regular direct employment to 85,020.

Exceptional Opportunity to Enlarge Recreation Areas

HOW many cities realize the rapidly growing need for more and diversified recreation? How many cities realize that this is not a temporary depression requirement, but a growing permanent necessity in our over-mechanized civilization?

The city that has a master plan knows where its future parks and playgrounds ought to be, and could secure options on suitable properties in the right locations before speculators would know what was going on. When options had been secured for enough properties, formal action would be taken by the city council. By going after the matter in this secret way, the city would get better prices than it would be possible to obtain in any other manner—provided, however, that the negotiators were honest people who knew real estate values. Even if the city did not have a plan, officials could judge what areas would be likely to be included in a park system.

The advantages to the city in taking action at once are many. In the first place, it would undoubtedly save large amounts of money if the present financial situation were properly taken advantage of. The city would provide recreational facilities when they were needed and not, as usually in the past, many years in arrear of the requirement. The city could afford to acquire much more ground than would be possible in times of normal or inflated prices, and thus lay out more ball fields and golf courses than otherwise could be done. The city would furnish work opportunities to the unemployed, whether paid by the city as emergency work or by state and Federal appropriations.

Land favorably located for recreation is, as a rule, well adapted for subdividing. By taking this land out of the market, the city would reduce the probability of over-development of subdivisions, from which "disease" most cities suffer at the present time.

Some cities might even consider such a radical step as the purchase of considerably more land than is actually needed for park and recreational purposes. This has often been done in Europe, and, though we in America in the past have considered this practice an infringement on private and personal rights, there is still much merit to the plan. Legislative authority would in most cases be necessary for such action by city governments.

If the land were acquired at present low prices and administered properly, there is no doubt that the community, especially a rapidly growing one, would benefit immeasurably. The city could subdivide for the *best use*, not for the largest profit to the developer. The city could and would take into consideration both the ultimate user of an individual parcel of land and the community as a whole. The subdivisions could be prepared and be put on the market when there was an actual community need, and not, as now so often is the case, when the owner wants to take a profit or is forced to sell.

Even if the city in this way should control only a portion of the land suitable for subdivision, it would be able to influence the subdivision market and keep it from running riot as often has been the case in the past. It might not be desirable for the city to go into the subdivision *selling* business, but then it could readily leave the actual selling in the hands of agents.

The city would have complete platting control over the land thus acquired for subdividing purposes and it would retain for itself all the unearned increment in land value, which may represent a large amount of money, and the taxpayer would in the long run be the greatest beneficiary.

F. WOODS BECKMAN.

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THE 1935 FORD V-8 TRUCKS AND COMMERCIAL CARS

White House Announces Work-Relief Set-Up

CREATION of a Division of Applications and Information in the National Emergency Council, headed by Frank C. Walker, as a clearing house for all proposals for work projects under the $4,880,000,000 program, was announced by the White House on April 23. According to the official statement:

"This new Division of Applications and Information will act as a clearing house with the general objective of providing for the public and for officials of the Federal, state and local governmental agencies, as well as for civic organizations, a central place for their general convenience. Here will be received all suggested plans for the useful expenditure of work-relief funds, no matter what the source of these suggestions may be.

"In this Division these plans will be carefully sorted and checked, and where engineering or other study is necessary such study will be obtained from the regular government departments best qualified for the work. A preliminary comparison of the usefulness of all of these plans will be made by the Division, and the plans themselves will then be segregated to conform with the relief areas, which, in turn, will be based on the number of unemployed persons within a proper geographical area.

"As fast as these plans are cleared through this Division they will be submitted to a works allotment board, the details of which will be announced in a few days. It is worth noting that a very large number of projects already have been studied and reported on by the various governmental agencies during the last six months. These projects are ready for delivery to this new Division for clearance.

"The other principal function of this new Division will be to act as an information service on the disposition of projects which have been submitted and, in the case of projects which have been approved and on which work has been begun, as the source of information on the progress of work on such projects."

How Ninety-Four Cities Spend Their Income

AVERAGE per capita costs of $46.08 for operation and maintenance of general departments of large city governments are reported in a statement just issued by the Bureau of the Census for the 94 cities having a population of over 100,000, covering the fiscal year ended December 31, 1933, or the latest complete fiscal year closing on a date prior thereto. These general departmental costs for the 12-months period totaled $1,727,042,682. For the same period the aggregate governmental costs of the 94 cities amounted to $2,464,319,602; the aggregate revenue receipts were $2,506,723,973; and the total net indebtedness was $6,360,586,081. Payments for the operation and maintenance of public service enterprises, as water works, electric light plants, and similar enterprises, amounted to $115,264,395; interest on debt, $355,016,375; and outlays for permanent improvements, including those for public service enterprises, $266,996,130.

The totals for the 94 cities include all governmental-cost payments for the year, whether made from current revenues or from the proceeds of bond issues.

Of the 94 cities covered by this report, only 8 were lacking in revenues sufficient to meet all operating expenses and interest, while 60 realized enough revenues to meet all their payments for expenses, interest, and outlays and to have a balance available for paying debt.

Of the total governmental-cost payments in 1933, 70.1 per cent was for operation and maintenance of general departments; 4.7 per cent, operation and maintenance of public service enterprises, such as water-supply systems, docks, wharves, markets, etc.; 14.4 per cent, interest on debt; and 10.8 per cent, outlays for permanent improvements (public buildings, etc.).

Of the payments for operation and maintenance of general departments, 32.5 per cent was for education; 17.3 per cent, protection to person and property; 16.9 per cent, charities, hospitals, and correction; 8.2 per cent, general government; 6.4 per cent, highways; 5.8 per cent, sanitation or promotion of cleanliness; 3.5 per cent, recreation; 2.3 per cent, conservation of health; and 7.1 per cent, miscellaneous.

With the exception of an increase of almost 4 per cent for charities, the percentages for 1933 show but little change from those for 1932, the largest in each of the years being for education and the smallest for conservation of health.

Of the total payments for outlays for permanent improvements, the principal items were $89,699,205, or 33.6 per cent, for highways; $26,843,100, or 10.1 per cent, for education; and $84,842,494, or 31.8 per cent, for public service enterprises.

For 1932 the per capita cost for operation and maintenance of general departments of the 94 cities was $47.88, as compared with the above-mentioned figure of $46.08 for 1933.

The Municipal Bond Market

COMMENTING on the continued spectacular trend towards higher prices (or lower interest rates) for municipal bonds, *The Bond Buyer*, in its issue of April 13, 1935, says in part:

"In considering the market position of municipals, one big fact stands out. Over $1,300,000,000 fully tax-exempt Liberty 3½'s have been called for payment on June 15 next. Secondly, it must be kept in mind that virtually no new private corporation securities are being issued. Third, a substantial proportion of the new issues of state, municipal and other tax-exempts are merely put out to refund outstanding issues and thus absorb none of the capital which is awaiting investment, although these issues do result in a certain amount of switching operations which means business for security dealers and brokers.

"Under such circumstances, the municipal market could not have failed to do just what it has done, nor can it be expected to move in any other direction so long as this remarkable situation exists and is undisturbed by other powerful and conflicting factors."

Typical sales of new issues from recent numbers of *The Bond Buyer*:

Amount	Borrower and Purpose	Rate (%)	Term (Years)	Basis (%)
$2,000,000	Rochester, N. Y., Tax Revenue	1.5	1-5 Ser.	1.31
230,000	Binghamton, N. Y., Relief	1.6	1-10 Ser.	1.54
491,000	O'Brien Co., Iowa, Primary Road Refunding	2	5.33 Avg.	1.82
5,500,000	Maryland, Emergency	3	9.5 Avg.	2.10
200,000	Westchester Co., N. Y., Unemployment Relief	2.25	1-5 Ser.	2.13
136,000	Wareham, Mass., Fire Distribution, Water	2.25	7.83 Avg.	2.20
150,000	Anderson, Ind., School City, Funding	2.5	5.75 Avg.	2.40
450,000	St. Louis Co., Minn., County Road	2.5	9.33 Avg.	2.46
100,000	Derby, Conn., Highway, Park and Public Improvements	2.75	16.33 Avg.	2.51
21,000,000	California, Relief	3.5	9.25 Avg.	2.79
180,000	Midland, Mich., Sewer	3.10	11.5 Avg.	3.09
112,000	Pen Argyl, Pa., School District	4	16.75 Avg.	3.26
120,000	Brookings, S. Dak., School Refunding	3.5	8.66 Avg.	3.35
300,000	Benton Harbor, Mich., Refunding	4	6.5 Avg.	3.97
147,750	Portsmouth, Ohio, Refunding	4.25	8 Avg.	4.16
3,100,000	Henry Hudson Parkway Authority, N. Y., Bridge Construction	4	20	4.3
473,000	Wayne Co., N. C., Refunding, Road and Bridge	5	14.5 Avg.	4.94

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Speaks from experience!

HERE is what another chief of police, in a city of over 80,000, says about motorcycles for traffic control—

* "I recognize the value of both automobiles and motorcycles in police work, but I cannot too strongly endorse the use of motorcycles for traffic control. Every police department should give serious consideration to motorcycles for traffic regulation purposes. . . . A uniformed officer mounted on a motorcycle, riding up and down through traffic, will secure far better results than a half dozen policemen in cars. . . . Our traffic accident records prove this to be true . . . and the cost of operating a car is more than three times the cost of operation for a motorcycle in police work."

Thousands of chiefs have found by experience that motorcycles are indispensable in traffic control work. And the choice of these chiefs is overwhelmingly "Harley-Davidson."

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IMPROVING MUNICIPAL ADMINISTRATION

Current Items from the
Public Administration Clearing House

North Central States Tax Officials' Conference Formed

TAX assessing officers and other tax officials of the Great Lakes region meeting in Chicago recently to talk over their interstate taxing problems have formed a permanent organization—the North Central States' Tax Officials Conference. Illinois, Indiana, Iowa, Kentucky, Michigan, Minnesota, Ohio and Wisconsin are represented in the Conference, which is headed by Melville B. McPherson, Chairman of the Michigan State Tax Commission.

The Conference plans among other objectives: (1) the formulation of definite and cooperative policies of assessment procedure for properties located in more than one state; (2) the development of uniform methods for taxation of public utilities, boats, pipelines and other taxable properties common to all the states in the region; (3) the determination of the kind and extent of supervision which the State Tax Commissions should exercise over local tax assessors. It is planned to hold frequent meetings of members of the Conference within the region, to discuss problems of taxation peculiar to the North Central area. The next meeting will be held in Chicago following the final adjournment of the various state legislatures, when the new legislation will be discussed.

The Conference will work in close cooperation with the National Association of Tax Assessing Officers, whose Assistant Director, Albert W. Noonan, is also Secretary of the new organization.

Tax Data Tabulation as a Work-Relief Project

WORK-RELIEF projects of a new type will be set up under the administrative provisions of President Roosevelt's $4,800,000,000 works appropriation if plans prepared by the Interstate Commission on Conflicting Taxation are followed, according to Henry W. Toll, Secretary of the Commission and Executive Director of the American Legislators' Association. The new type of project, which would probably be set up under the technical and professional provisions of the works bill, will be the tabulation of local and state tax data in standard form throughout the country.

When the Second Interstate Assembly met in Washington, D. C., in March, it passed a resolution requesting the Interstate Commission on Conflicting Taxation to prepare forms for reporting tax data, so that comparable results from the various states would be insured. These forms have been prepared and will be circulated among the state and local authorities, so that they may be ready to apply for permission to set up their own tax-data work-relief projects.

The Second Interstate Assembly recommended that each state not only "provide for the tabulation and publication of complete statistics of state and local taxation, expenditures and debt," but make continual analyses of such fiscal affairs to make possible "intelligent appraisal of the activities of government, and effective state and local administration."

The forms prepared by the Interstate Commission on Conflicting Taxation refer to revenues collected from taxes and licenses only. The National Committee on Municipal Accounting, the Central Statistical Board and the U. S. Bureau of the Census are developing plans for assembling expenditure and debt statistics. The figures tabulated by these agencies, combined with data on revenue collected under work-relief auspices, will, the Commission believes, result in a composite picture that will greatly clarify the making of state revenue plans and help iron out conflicts in the tax systems of the various levels of government.

Triple Partnership: Key West's Experiment

KEY WEST, tip city of Florida, is preparing to initiate a unique experiment in local government by combining Federal, state and local authority in new functional relationships. Described in the April issue of *Public Management*, the new arrangement consists of the consolidation of the city of Key West and the county of Monroe—total population 13,200—into a unified government embracing all the old and adding new governmental powers for the entire area. The Florida State Legislature will consider the matter this month.

Governing the area would be a commission of three: one member appointed by the Federal Government; one by the Governor of Florida; and a third elected by the people. The National Government comes into the picture because of the present emergency and through its interest in the Everglades National Park, a part of Monroe County. Although the set-up sounds like another District of Columbia, it would differ in that the citizenry would retain the voting privilege. Executive officials would be appointed.

Key West has seen centralized control work out successfully on home ground before. Eight months ago state relief officials, at the request of the City Council and the County Commission, took over the municipality because industries had died out, 50 per cent of the population had left, and 80 per cent of the rest were on relief. Florida State Relief Administrator Julius F. Stone advised emergency rehabilitation, which made the destitute cigar-manufacturing city into a much-sought recreation center. The City Council continued to pass ordinances, and the Mayor and other city officials remained, but only as a formal legal "front" for the relief administration.

The new Key West is careful to keep the atmosphere of a romantic city. A fine arts commission must okay all improvements and remodeling. The city has an ordinance against dumping of refuse and another against noisy auto horns. Since its transformation the city has seen relief rolls drop by a fourth and bonds quoted 11 points higher.

Officials of the state of Florida and of Key West appear eager for the experiment, which they believe may be the forerunner of similar solutions to conditions growing out of over-enthusiastic bond-issue financing, depression, decadent industries, and duplication in taxation.

Police and Strikes

PUBLIC interest, as well as that of the employer and the employee, demands that full knowledge of "the rules of the game" be impressed on all parties concerned in the event of a strike, says Donald C. Stone, Director of the consulting and research division of Public Administration Service, writing on "Police and Strikes" in the current issue of *The Survey*.

"When a strike occurs," says Mr. Stone, "the mayor, the city manager or the chief of police, if wise, will call in the leaders of the strike and discuss with them freely and frankly the problems of law enforcement that may arise. He will discuss their rights with them and work out plans for assuring that such rights be observed, and that they also observe the responsibilities accompanying such rights. He will also call in the employers and talk with them. He will bring both strike leaders and employers together to establish rules covering picketing, carrying of weapons, making of threats, and so on. . . ."

Mr. Stone further asserts that the public administrator should tell the employers separately a lot of things—that no thugs or industrial detectives would be allowed, that no guard or company agent could operate outside the company grounds, that strikers have civil rights which should be protected. "Every city," he continues, "should adopt a definite policy with regard to matters affecting public order, such as parades, picketing, demonstrations, public meetings, and assemblages. This should include the designation of places in the city where labor leaders, communists, capitalists, butchers, bakers and candlestick makers can talk

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on any subject at any time to any one who will listen. Persecution breeds martyrs, whether it be of radicals or conservatives, laborers or capitalists, strikers or employers. We have never learned in this country that the best way to . . . satisfy a militant group is to encourage it to release its energy in terms of words, not in terms of force."

Mr. Stone finds that the police "are in a tight spot" during a strike, no matter how honestly or impartially the laws are administered. He believes that only through specific regulations governing strikes as well as other disorders, and impartial enforcement of laws and regulations, can disputes be adjusted intelligently and in an orderly manner.

Public Works Engineers—As Inquirers and Reporters

LETTING the taxpayer know just what municipal services he gets for his money is just as important as keeping the standard of service high, and the public works engineer and official must learn to supply the data. The importance of this research side of municipal engineering is emphasized in the Public Works Engineers' Yearbook, 1935, which has just been issued by the Joint Secretariat of the American Society of Municipal Engineers and the International Association of Public Works Officials.

Since "the taxpayer rightfully wields the bosses' stick," the Yearbook points out, "he should be given frequent and thorough information on the business he is bossing." It may surprise him to learn that during one year the $43.53 he spent (cities over 30,000) for fire and police protection, schools, recreation, roadways and streets was only $17.43 more than the per capita expenditure for vacation touring; or that the per capita general government costs, including fire and police, were only $12.80, about 50 cents more than what he spent on movies that year.

Many cities, however, at present have not the proper forms for reporting such enlightening facts, it is pointed out. According to the Committee on Uniform Street and Sanitation Records set up by the International Association of Public Works Officials, at least 90 per cent of the 300 larger cities in the country queried the past year have no means of knowing the exact costs of the public works services. Not more than 20 of these cities have a definite idea of what unit costs of street cleaning are; nor do they tabulate information on street maintenance, sewer work or other public works operation except gross expenditure figures.

If municipal public works departments would keep this information at hand, says the Yearbook, department heads would be better able to find out where expenditures are out of line with services rendered or to bring the services up to a higher efficiency. (See p. 119, this issue.)

What's Ahead for the City?

CHANGING relationships among the several levels of government—local, state and Federal—induced by cooperative procedure in dealing with such emergency functions as relief, housing and the like, constitute the most important problem now facing American cities. From this "enforced acquaintanceship" may spring "a new habit and a new terminology of cooperation." These are the opinions of Louis Brownlow, Director of Public Administration Clearing House, as expressed in the Municipal Year Book, 1935, a résumé of the more significant events and developments in municipal administration in 1934, to be published May 1 by the International City Managers' Association.

In this ever-growing "vertical integration of administrative responsibility" which parallels the "vertical responsibilities of citizenship which none of us can escape," Mr. Brownlow finds, local governments, and particularly municipal governments, will become more rather than less important. There are those persons, he says, who "would have us believe that because the cities have more and closer relationships with the states, and new and all but unheard-of relations with the Federal Government, they are about to be engulfed in some new nationalized and amorphous body in which their identity will perish with their independence."

Strongly opposed to this point of view, Mr. Brownlow finds rather that "if there is to be national planning for the utilization of our natural resources, it will be drafted through state planning agencies and carried into execution in detail by local governments." The same procedure will obtain when economic security, works and relief, and other programs become fact.

Mr. Brownlow's concluding prediction is that "the future of local government will be written less and less in terms of city *or* school district *or* county; more and more in terms of city *and* school district *and* county; less and less in terms of city *or* state *or* Federal Government; more and more in terms of city *and* state *and* Federal Government.

Improving Your City's Revenue Structure

RECOGNIZING the fact that the key to sound municipal credit and the maintenance of essential governmental service, present and future, lies in improving the municipal revenue structure, the Municipal Finance Officers' Association has rendered an important service in the publication of a 74-page pamphlet by its Director of Research, A. M. Hillhouse, entitled "New Sources of Municipal Revenue." *

Nothwithstanding the title of his report, the author wisely warns cities not to expect too much from the so-called "new" sources of income. "These should be invoked only after other means have been tried," says Mr. Hillhouse. He emphasizes the fact that for long-range financial stability the chief hope for the cities lies in further grants-in-aid and greater sharing in centrally collected taxes. For immediate budget balancing, assistance can come through strengthening existing taxation. This can be done by opposing tax-limitation laws, by pushing collections to reduce delinquencies, by getting all the taxable property on the assessment rolls, and by reducing the amount of exempted property. If no increase in tax collections follows these measures, cities may have to resort to new or undeveloped sources by emergency legislation until the machinery which will insure long-range stability starts moving.

Of the generally unused tax-raising devices, sales taxes, gasoline taxes and those on inheritance and income seem impractical for city use, the report states. Both sales and gasoline taxes when invoked by municipalities drive business to other communities.

It is important to note that the property tax still remains the financial anchor for American cities, though its relative importance as a revenue-producer has greatly decreased in the state. In 1922 almost 41 per cent of all state taxes were derived from assessments on property, whereas in 1932, less than 20 per cent were. On the other hand, in 1922 the cities received 94 per cent of their revenue from property tax, and in 1932 more than 92 per cent.

The check-list cites a number of new and minor sources of revenue which have been tried. For instance, certain cities have imposed charges on their population for sewer service on the basis of the amount of water consumed. Port Arthur, Texas, makes this a 15 per cent charge. Port Arthur, as do also Berkeley and Sacramento, Calif., and Oklahoma City, Okla., makes a direct service charge for garbage collection. In Lincoln, Nebr., every car owner must pay 25 cents twice yearly for having his lights and brakes tested. The 1933 yield from this source was $3,678. Atlanta, Ga., has proposed a similar ordinance from which anticipated collections are put at $25,000.

The evils of the tax-limitation law, the report indicates, are apparent from the new sources of revenue Hinton, W. Va., has had to devise. It collects 50 cents for fire protection and 50 cents for street lighting per person—man, woman and child—plus zoned increments on property. Beverage taxes are often turned to for revenue, but the unique law comes from New Mexico, where cities charge the drinker $1 for a license to quaff beer, $2 for wine, and $3 for the fellow who likes his good and strong. In Minneapolis an applicant for a liquor license has to pay all his back taxes before he can get one. This netted $75,000 from one applicant alone.

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Prepared by
FRANK B. WILLIAMS
Author of "The Law of
City Planning and Zoning"

ZONING and PLANNING NOTES

From Data collected
by the Zoning Committee
of New York
(233 Broadway)

Open-Air Parking

NEW YORK.—*City of Mount Vernon v. Travis Realty Corporation*, reported in *New York Law Journal*, March 4, 1935 (Supreme Court, Westchester County).—The plaintiff (city) seeks a permanent injunction against the defendants to prevent them from using certain premises in the city of Mount Vernon as a parking space. The defendant, Travis Realty Corporation, is the owner of five lots, two of which are zoned as "Residence A." The zoning ordinance of the city forbids the use of the premises for an open-air parking space. The defendant contends that inasmuch as it charges no fee as such for parking, it is not violating the ordinance. The Court rules, however, that whether the use made is for profit or not is immaterial. The fact that the defendant owner advertises "free parking space" as an inducement to prospective tenants indicates that its allowance of the use of this space is not altogether altruistic.

Boards of Appeals—Practical Difficulties

NEW YORK.—*People ex rel. Rock Jay Realty Co. v. Murdock*, reported in *New York Law Journal*, March 2, 1935 (Supreme Court, Kings County.)—The opinion of the Court in this case is as follows:

"The basic question upon this motion is whether the Court can justifiably substitute its determination for that of the Board of Standards and Appeals with respect to the existence or non-existence of practical difficulties and unnecessary hardships. The Appellate Division of this department in *Matter of New York and Richmond Gas Co. v. Cornell* (*New York Law Journal*, July 2, 1934) has very definitely stated: 'Whether there are such practical difficulties or unnecessary hardships is a matter for determination by the Board of Standards and Appeals, whose finding, in the absence of clear abuse of discretion *must be sustained by the Courts.* [*Italics mine.*] The above holding follows the principle enunciated by the Court of Appeals in *People ex rel. St. Albans Springfield Corporation v. Connell* (257 N. Y. 73). There it is said that the Court cannot substitute its own discretion for that of the Board in a situation where the exercise of discretion is possible; and that the judgment of the Board should be final unless it clearly appears to be arbitrary or contrary to law.' [Citing other cases.]

"In the present case, at the close of the hearing, the official referee remarked that in his own opinion the relator had made out a 'very strong case.' He subsequently denied the application, however, on the authority of the Richmond Gas Co. decision (supra). Although likewise I am frankly of the view that the relator has made out a very impressive case, nevertheless, under the above-cited authorities, nothing has been shown herein to warrant a substitution of any discretion for that which has been exercised by the Board."

NEW YORK.—*Young Women's Hebrew Association v. Board of Standards and Appeals*, 266 N. Y. 270 (Court of Appeals, February 26, 1935).—The Young Women's Hebrew Association is the owner of premises on the northwest corner of Fifth Avenue and 110th Street, New York City. The property is wholly within a district zoned for business, in which gasoline service stations are forbidden.

The Board of Standards and Appeals is empowered in a specific case to vary any provision of the Zoning Resolution where the variation is in harmony with the general purpose and intent, to secure the public health, safety and general welfare, and does substantial justice, and the case is one "where there are practical difficulties or unnecessary hardships in the way of carrying out the strict letter" of the provisions of the Zoning Resolution of the city. Pursuant to the power so conferred in a case of unnecessary hardship, the Board granted the Association permission to convert its property into a gasoline service station.

This action, reviewed by certiorari, now comes to this Court.

The return of the Board showed that:

1. In the locality there was a gasoline station on the northeast, and another on the southeast, corner of the avenue, the property of the Association on the west side of the avenue being occupied by a motion picture theater.
2. There is no gasoline service station for a long distance on the west side of Fifth Avenue; so that south-bound traffic in order to obtain gasoline along this thoroughfare was compelled to make a complete round-about turn in order to cross to the east side of the thoroughfare where the gasoline stations were located, thereby making traffic congestion. The Board of Standards found that a gasoline service station located on the premises of the applicant would, under such conditions, fill a public need by obviating traffic congestion.
3. The hearing further disclosed that the applicant was suffering real hardship in that the use of the premises for a conforming purpose would cause it a loss of from $200 to $300 a week and this be tantamount to confiscation.

The Court finds little to be said respecting the first and second reasons assigned by the Board for its action. The nearby gasoline stations had been there when their use was proscribed in a business district in 1925; and the fact that congestion would be relieved "is an interesting observation, but does not bear on the question of hardship very much."

The third reason given for the action of the Board raises questions the importance of which is attested by recent cases in this Court involving much the same inquiry [cases cited]. No doubt the Board is right in its conclusion that the quality of the locality has so far been transformed that the property (as it now stands) cannot be made to serve any productive conforming use. It may be assumed, too, that under present economic conditions, no wise and careful business man would exploit the law by substituting for the existing structure one adapted to conforming ends. Still the case does not warrant the exercise of the delicate jurisdiction to vary, on the basis of unnecessary hardship, the applicable provision of the Zoning Resolution. A variation, under the section which applies in this case, must do "substantial justice." To that end it must, so far as practically possible, affect alike all persons in the same situation. Equality of privileges is a basic principle of government. To cure by exemption in this case the loss resulting to an owner from general deterioration of a neighborhood is to depreciate the adjacent properties of other owners, and is unjust also to those whose properties remain subject to the same restriction in other localities likewise impaired. Moreover, such a theory of variation would in the long run defeat the general purpose of a zoning law; for, as said in *Prusick v. Board of Appeal*, 262 Mass. 451: "It is manifest from the general purpose underlying a zoning act . . . that the power to vary the application of the act is to be exercised sparingly. Exceptional circumstances alone justify relaxation in peculiar cases of the restrictions imposed by the statute. The dominant design of any zoning act is to promote the general welfare. The stability of the neighborhood and the protection of property of others in the vicinity are important considerations. The financial situation or pecuniary hardship of a single owner affords no adequate ground for putting forth the extraordinary power affecting other property owners as well as the public."

EDITOR'S NOTE.—It is difficult to add anything of value to the statement of the important principle so well enunciated by this Court in the above decision. As is there so clearly shown, it is only the exceptional case of injustice that can be justly remedied by a variance by a board of appeals under the practical difficulty provision; more general injustice must be dealt with by a more comprehensive readjustment of the provisions of the ordinance, to be obtained by its amendment and not by court action.

It should also be noted that the regulation of the number and location of gasoline stations in a given locality cannot, in the opinion of the judges in this case, be accomplished by boards of appeals under the provision with regard to variance for practical difficulties. Other methods of obtaining such results, often so much in the public interest, can no doubt be found under the police power of the state, which the state may delegate in appropriate cases such as this to local governments.

See "Eminent Domain for Clearing Slums and Building Low-Cost Housing Upheld," p. 82, this issue.

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THE CITY'S LEGAL RIGHTS AND DUTIES

Conducted by A. L. H. STREET, Attorney at Law

Accidents

City held liable for goods burned in truck passing over highway on which city was negligently burning weeds (Washington Supreme Court: *Seibly v. City of Sunnyside*, 35 Pac. 2, 56).

City held liable for plunging of automobile over hillside, due to loss of control caused by a series of holes in pavement (Kentucky Court of Appeals: *City of Catlettsburg v. Davis' Administrator*, 74, S. W. 2d, 341).

City held not liable for injury to person slipping or tripping on street-car loading platform in street, no negligence being proved (Massachusetts Supreme Judicial Court: *Tavano v. City of Worcester*, 192 N. E. 22).

Evidence held to justify finding that city was negligent in failing to maintain in reasonably safe condition a metal slide used by children on a public playground (Ohio Court of Appeals, Lucas County: *Felt v. City of Toledo*, 192 N. E. 11).

City's contract to indemnify railroad against liability for injuries arising in construction of sewer across railroad right-of-way held valid (United States Circuit Court of Appeals, Sixth Circuit: *City of Cleveland v. Baltimore & Ohio Railroad Co.*, 71 Fed. 2d, 89).

Bond Issues

Hydrant rental obligation assumed by city in connection with issue of water revenue bonds held creation of debt within constitutional debt limitation (Missouri Supreme Court: *State v. McWilliams*, 74 S. W. 2d, 363).

Submission to electors of bond issue proposal held invalid because not permitting separate votes on three distinct objects of proposed issue (Mississippi Supreme Court: *In re Validation Bonds, City of Moss Point*, 156 So. 516).

Sewer and water revenue bonds, secured by mortgage, held not violative of debt limit and exemption provisions, but void for want of referendum and not validated by curative act (Texas Court of Civil Appeals: *City of Cross Plains v. Radford*, 73 S. W. 2d, 1093).

Bond purchaser held entitled to recover deposit on abandonment of project for which bonds were to issue (Michigan Supreme Court: *Robinson v. Village of St. Clair Shores*, 255 N. W. 182).

Civil Service

Reinstated employee held entitled to back pay (New York Supreme Court, Appellate Division: *Barmonde v. Kaplan*, 273, N. Y. Supp. 668).

Assistant bathhouse keeper held not removable for political affiliation (New York Supreme Court, Erie County: *Merriweather v. Roberts*, 274 N. Y. Supp. 188).

"For good of the service" held not a sufficient specification of the reason for removing an officer under a statute requiring the reason to be specified (Massachusetts Supreme Judicial Court: *McKenna v. White*, 192 N. E. 84).

Public Utilities

Utility commission held empowered to abandon municipal bus line without first securing approval by supervisors (California District Court of Appeal: *Mann v. City and County of San Francisco*, 34 Pac. 2d, 817).

Referendum

Ordinance for street lighting and fixing electric rates held subject to referendum (Ohio Supreme Court: *State v. Hillyer*, 191 N. E. 2).

Salaries

Charter provision authorizing reduction of official salaries held applicable to policemen but violative of constitutional requirement that salaries be fixed by charter (Colorado Supreme Court: *McNichols v. People*, 35 Pac. 2d, 863).

Statutory requirement for "concurrent action" by Board and Council in reducing police salaries held complied with without joint session; it being sufficient that one body approved action taken by other (Massachusetts Supreme Judicial Court: *Openshaw v. City of Fall River*, 192 N. E. 46).

Special Assessments

Paving assessment held not invalid because City Engineer received five per cent of contract price of improvement nor because of contractor's five-year guaranty of work(Texas Court of Civil Appeals: *Farley v. Uvalde Paving Co.*, 74 S. W. 2d, 288).

Leaving of narrow strip between sidewalk and property line held not to prevent special assessment of property as abutting upon street (Michigan Supreme Court: *Marqua v. City of Detroit*, 256 N. W. 455).

Unappealed-from special assessment held unassailable (North Carolina Supreme Court: *City of High Point v. Brown*, 175 S. E. 169).

Municipality held not empowered to levy special assessments for paving in absence of charter authority, nor entitled to levy assessment by ordinance after completion of paving (Georgia Supreme Court: *Daniel v. Smith*, 175 S. E. 240).

Street Improvements

City merging alley into new street held not bound to condemn street rights as to space occupied by alley (Michigan Supreme Court: *Marqua v. City of Detroit*, 256 N. W. 455).

Informal indication of intent to abandon paving improvement held not to preclude later adoption at same meeting of ordinance for improvement. Failure of Clerk to strike withdrawing protestant's name from protest held not to save protest (Kansas City, Mo., Court of Appeals: *Riverview State Bank v. Courtney*, 74 S. W. 2d, 81).

Streets and Highways

Borough held liable for damages due to changes in highway lines and grades in improvement of state highway, through having passed ordinance without reservation of exemption from such liability (Pennsylvania Court of Common Pleas, Cumberland County: *Farmers Trust Co. v. Cumberland County Commissioners*, 25 Pa. Munic. L. Rep. 193).

Taxation

Farm deeded to city to carry out reforesting project of educational nature held not exempt as owned by a corporation organized *exclusively* for educational purposes (New York Supreme Court, Appellate Division: *In re Board of Education of City of Jamestown*, 272 N. Y. Supp. 801).

General tax lien held superior to special assessment liens (United States District Court, Middle District of North Carolina: *City of Winston-Salem v. Powell Paving Co.*, 7 Fed. Supp. 424).

Traffic Regulations

Non-parking ordinance held not to prevent abutting property owner, or one claiming under him, from stopping to deliver and unload articles (Ohio Court of Appeals, Lucas County: *Eisenmann v. Tester*, 191 N. E. 839).

Ordinance excluding commercial vehicles from highway within city upheld (New Jersey Supreme Court: *Garneau v. Eggers*, 174 Atl. 250).

Wharves

Warrants payable from municipal wharf, etc., revenues held not to require electoral assent as being bonds (Alabama Supreme Court: *State v. City of Mobile*, 155 So. 872).

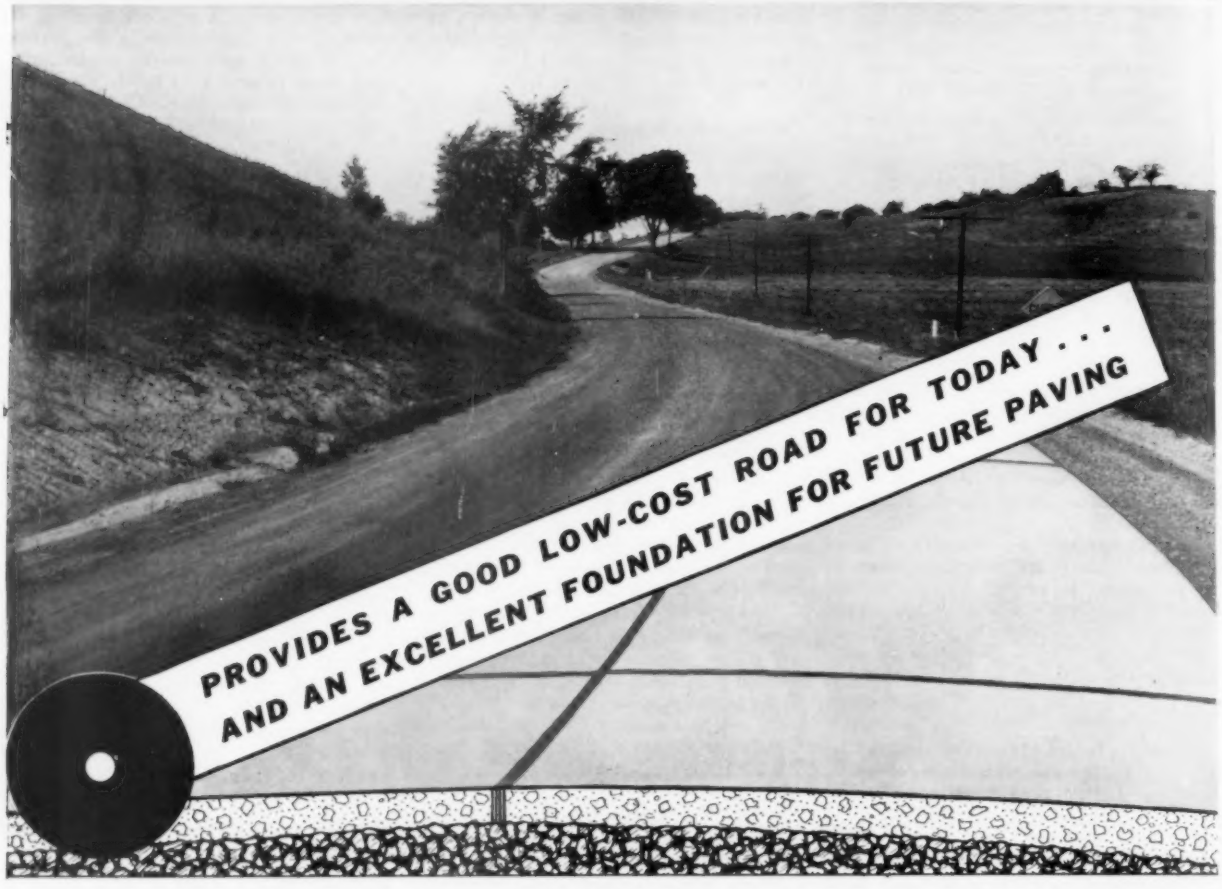
Workmen's Compensation

Village Marshal held officer, not employee, and hence not covered by Workmen's Compensation Act (Nebraska Supreme Court: *Suverkrubbe v. Village of Fort Calhoun*, 256 N. W. 47).

Fire Chief held an "employee" and hence covered by Act (North Carolina Supreme Court: *Nissen v. City of Winston-Salem*, 175 S. E. 310).

Street employee held covered by Act while removing live wire from his automobile while driving home (Louisiana Court of Appeal: *Ford v. City of Alexandria*, 155 So. 48).

Soil Stabilization



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MUNICIPAL AND CIVIC PUBLICATIONS

Prices quoted do not include postage, unless so stated

Municipal Finance

Financing Municipal Recreation.—By Randolph O. Huus. The George Banta Publishing Co., Menasha, Wis. 1935. 250 *pp.* $2.50 *from* THE AMERICAN CITY.

Mr. Huus has made for city recreation the type of study which the reviewer has felt for some time should be made for every important function of city government. In his treatment of the question of financing public recreation by appropriations from the general fund rather than by special levies, the author avoids the pitfall into which so many other advocates of particular functions have fallen.

"Planning for all municipal functions is hampered rather than helped by fiscal arrangements which safeguard the plans for single functions. The fear of 'politics' indicates a distrust of democratic processes in local government. That such fear is too often justified does not in itself make the alternative method suggested a wise one. If this were so, a special tax levy for each function would be desirable. But a special levy for every function presupposes an omniscience on the part of legislators and voters, regarding the relative needs of cities over a term of years, which does not exist. The trend to bring all city services under the control of a single executive, such as a strong mayor or a city manager, in the interest of economy and efficiency, is one which the proponents of the special tax levy for parks and recreation cannot ignore. . . . In general, the writer is of the opinion that, in the long run, it is sounder policy to finance park and recreation activities from funds from the general tax levy rather than from a special tax levy. It is good finance and good administration to insure such flexibility in the diversion of municipal funds that annual readjustments may be made in relation to changing wealth and comparative needs."

The study is divided into two main sections. Part I is devoted to sources of income, including special assessments, excess condemnation, gifts, transfers, leases and permits, and income from park and recreation properties. In Part II growth and trends in municipal recreation expenditures and technical aspects of budgeting and financial planning are discussed.

The book will provide valuable material to students of municipal expenditures as well as to those primarily concerned with public recreation.

MABEL L. WALKER.

Budget Making

The Budget in Governments of Today.—By A. E. Buck, Institute of Public Administration and Columbia University. The Macmillan Co., New York. 1934. 349 *pp.* $3.00 *from* THE AMERICAN CITY.

Dr. Buck's earlier books on this subject, "Municipal Finance" (1926) and "Public Budgeting" (1929), have been the chief reliance of students in this field for a number of years. The present volume adds another valuable contribution to budget literature.

The origin and development of the budget is outlined, and present budget-making procedure in a number of different countries is described. Incidentally, there is a useful summary of the governmental set-up in several of the countries, for example, Russia, Italy and Germany, which have recently adopted new political patterns.

The respective rôles of the executive and the legislature in budgeting are discussed at length, and technical details of formulation, authorization and execution are treated. The author concludes that although the development of the budget in the United States has made considerable progress during the last two or three decades, it has as yet scarcely passed beyond the initial stages.

Suggestions for improvement are as follows: "(1) provision for extending the authority of the executive in the formulation and execution of the budget; (2) establishment of means of cooperation between the executive and the legislature in budget making; (3) readjustment of legislative organization and procedure for handling the budget; (4) improvement of the form and set-up of the budget document and a closer tie-in of the self-supporting public enterprises with the general budget; (5) financial reorganization in the administration to enable the executive to control the carrying-out of the budget; and (6) installation of the audit and review necessary to legislative enforcement of executive accountability for the budget."

Municipal Administration

Government Career Service.—By Leonard D. White, Ph. D., Professor of Public Administration, The University of Chicago; Member of the United States Civil Service Commission. The University of Chicago Press, Chicago. 1935. *XIII* + 99 *pp.*. $1.50 *from* THE AMERICAN CITY.

These lectures, delivered in February, 1935, at the University of Chicago, deal with career service in the administrative group in the national government: the establishment of a type of career that will attract the strongest and most intelligent young men and women of each generation; its organization; the conditions of service of an administrative career corps; the foundations of a career service; and its doctrine of loyalty.

Taxation

Spenders All: A ruthless exposition of the burden of taxation.—By Ernest Greenwood. D. Appleton-Century Company, New York. 1935. 234 *pp.* $2.00.

This ill-balanced appeal to "John Public, alias The Sap," to become a "practical tax revolutionist" is compounded of exaggerated statements of governmental costs and an almost total lack of recognition of the benefits of governmental spending. The book assumes in its irresponsible hero an amazingly low order of intelligence. We are told, for example, that John Public's interest in the education of his children lies in his supposition that our free public schools "don't cost me a cent." The author's Foreword states—what becomes all too obvious in every chapter—that the book "contains no political philosophy and offers no patent solutions."

The most recent pamphlet issued by the Tax Policy League (April, 1935) is entitled "The Home Owner and the Sales Tax." It has been prepared by Mabel L. Walker, Executive Secretary of the League. The handy size of its 16 pages makes it a conveniently carried weapon in the battle for clear argument on the alleged value of the general sales tax to the small home owner. It is shown by authoritative statistics that the small home owner would pay the government about twice as much through a 2 per cent general sales tax on purchases of necessary commodities as he would save if the sales tax were applied to a reduction of real estate taxes. 25c. (Apply to the Tax Policy League, 309 E. 34th St., New York.)

"Comparative Tax Levies for 1929, 1933 and 1934 and Tax Collection Trends in Michigan Villages" is published by the Michigan Municipal League in the League's Information Bulletin No. 20, March, 1935. Information complete enough to tabulate was received from 183 villages. The information contained in the bulletin indicates that Michigan villages are continuing to exercise economy in operating their governments, that per capita tax levies are being held at a minimum, and that tax collections throughout the state are closely approximating normality. 26 mimeographed sheets, mostly tabular material. (Apply to the League, Ann Arbor, Mich.)

"A Revenue System for Texas Cities" is a pamphlet of 93 pages, prepared by J. T. Barton, Assistant in the Bureau of Municipal Research of The University of Texas, and is Municipal Studies, No. 3, of the University. It is based on a survey of 58 Texas cities—10 per cent of the total number. Separate chapters deal with the general problem of municipal revenue; the general property tax; receipts from municipally owned utilities; from licenses and occupation taxes; from such other sources as interest on city funds, special charges for personal or unusual services, rentals and sales of city-owned property, fines and forfeits, donations, refunds, etc.; and special assessments. "A Revenue Program" is the subject of the final chapter. A table presents the industries and activities taxed in various cities of the United States, and "The State-Administered Municipally-Shared Tax Systems of Six States" are also tabulated. Free. (Apply to The University of Texas, Austin, Texas.)

Engineering

Public Works Engineers' Yearbook, 1935: *Proceedings of American Society of Municipal Engineers; International Association of Public Works Officials; at the National Congress on Public Works and Municipal Engineering, held at Rochester, N. Y., September* 24-28, 1934. *Published by the Joint Secretariat*, 850 *E. 58th St., Chicago. XVIII* + 317 *pp.*

For the first time—in view of the fact that many of the sessions at the National Congress were sponsored by both the Society and the Association, and that a Joint Secretariat of the two organizations has since been established—the proceedings are published in a consolidated form. The basis of arrangement is that of subject matter rather than order of presentation at the Congress, and the Yearbook includes a number of articles reviewing progress in special branches of public works which were not presented at the Congress. The classification of the papers is under the following heads: Professionalizing Public Works; Public Works Management; City Planning and Housing; Work Relief Problems; Street Construction and Maintenance; Street Finance and Accounting; Refuse Disposal; Sewerage and Sanitation Developments; Public Utilities; Municipal Field Engineering; Airports and Landing Fields; Traffic Control; Street Lighting; Engineers in the Depression.

A full account of the establishment of the Joint Secretariat is given, and its advantages are explained; committee reports and organization business are included. The volume becomes a reference book for public works engineers. Membership rosters, and lists of officers and committees are important features of this presentation of the two organizations and will be of wide service.

Gardens

Garden Design.—By Marjorie Sewell Cautley. Dodd, Mead & Company, New York. 1935. *XVII* + 312 *pp. Many illustrations.* $5.00 *from* THE AMERICAN CITY.

A leisurely progress through this delightful book secures an illuminating application of the principles of abstract design to garden making, developed with such originality, practical intelligence and artistic comprehension that the reader's interest and confidence are continually quickened. It is abundantly concrete, stimulating the imagination, yet holding it to correct lines. Throughout, it selects plans, forms, colors, decorative elements, ornaments and texture, in all that native plant life offers, to parallel in their arrangement scale, proportion, balance, perspective, mass and space, in architectural effects. The chapter on color sets forth principles which enable one to choose and combine growing things for different color pictures at different seasons. An explanation of texture in building materials and fabrics introduces a discussion of similar effects in plant materials. Foliage plants are classified according to color and texture, for various uses. Many drawings by Dirk L. Luykx, architect, aid the detailed exposition; diagrams of what may be done, and photographs of what has been done in notable instances, add much interest. The book is of great value not only to owners of small homes and large estates, but also, in its statement and elaboration of principles, to designers of parks, public gardens, and other community open spaces.

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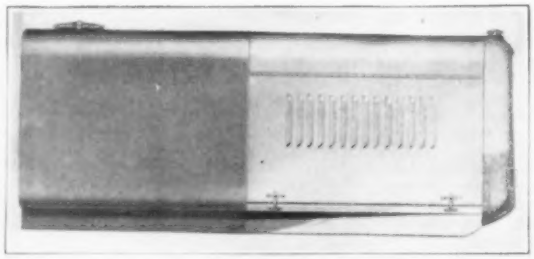

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Planning and Civic Comment

A new quarterly with the title *Planning and Civic Comment* appeared in March, covering January—March, 1935, as the successor to *City Planning, Civic Comment,* and *State Recreation,* and as the official organ of the American Civic Association, the National Conference on City Planning and the National Conference on State Parks. Its Editorial Board is composed of Harlean James, Flavel Shurtleff, and Beatrice Ward Nelson; its Managing Editor is Dora A. Padgett. The list of contributing editors includes 30 well-known names.

In its 32 pages of handy size this initial issue presents outstanding facts and features in its broad field, in which it aims "to create a better physical environment which will conserve and develop the health, happiness and culture of the American people." The news element is an essential part of the treatment of the material, which embraces articles and items on national, state, regional and city planning; land and water uses; conservation of natural resources; national, state and local parks, highways and roadsides. Housing, billboards, emergency relief, preservation of historic sites, are naturally given special attention. Excellent photographs add to the interest. The Zoning Round Table is conducted by Edward M. Bassett. The departments of State Planning Notes and Book Reviews, and other notices, keep one in touch with recent publications on planning progress. $3.00 a year. (Editorial office: 901 Union Trust Bldg., Washington, D. C.)

Municipal Administration

The Annual Report of the city of Cincinnati for 1934, under the title "Municipal Activities," is most clearly and attractively presented. The photographs and charts illuminate definitely this record of distinguished achievement. "Cincinnati rode out the year 1934 without any real difficulties. Taxes were paid in large proportion, expenses were met to the penny, services were maintained without interruption, and the morale of citizens and public employees continued on a high plane." 61 pp. (Apply to C. A. Dykstra, City Manager, Cincinnati, Ohio.)

Community Beauty

"Give Your Town a Personality!" says Ernest Elmo Calkins, in the March, 1935, issue of *The Rotarian.* He deplores so-called "beautification" of landscape by large, artificial floral emblems supposed to express the pride of local Rotarians in their community. He welcomes, however, ideas which, carried out, would "wipe out the more distressing evidences of our industrial civilization" and make really beautiful "after" views out of hideous "before" scenes, creating, as by-products of beauty—tidiness, order, comfort, convenience, efficiency. Instances of such appropriate transformations are described and depicted, and the principles of attaining suitable fame by the looks of one's community are made clear. The annual subscription to the magazine is $1.50 in the United States. (Apply to *The Rotarian,* 35 E. Wacker Drive, Chicago, Ill.)

Elections

A "Manual for City Election Officials in Wisconsin" has been prepared by Clarence R. Jirtle, of the University of Wisconsin, as a FERA project for the League of Wisconsin Municipalities. February, 1935. The author's intention is to summarize some of the most common questions presented and involving the duties of election officials, in order that honest and impartial elections may result throughout the state. Questions and answers are put in simple form, and therefore reference is made to the authority from which each answer is obtained, for the benefit of election officials if confronted with an issue. 14 mimeographed sheets. 25c; free to officials in member municipalities of the League. (Apply to League of Wisconsin Municipalities, 114 N. Caroll St., Madison, Wis.)

Economic Security

"The Program for Economic Security," presented in clear, impressively illustrated form (10 quarto pp.), shows what this program means in employment assurance, unemployment compensation, old-age security, security for children, and health services and accident compensation. (Apply to President's Committee on Economic Security, 1734 New York Avenue, Washington, D. C.)

Public Welfare

A digest of recent opinions in the fields of social work and public welfare administration has been compiled by Russell H. Kurtz, of the Charity Organization Department of the Russell Sage Foundation, under the title "Looking Toward a Public Welfare Plan." It is presented in a pamphlet of 34 photo offset pages. "It is clear that leaders in social work and public welfare have attained considerable unanimity of opinion as to the need for a new national-state-local alignment to welfare services—a so-called 'permanent' plan to replace the present chaos of emergency relief, poor relief, categorical aid and obsolete settlement restrictions. . . . Without Federal participation and leadership, neither the states nor the local units may be expected to push the whole distance in the present drive toward modernization of the welfare machinery." 25c. Apply to Charity Organization Department, Russell Sage Foundation, 130 E. 22d St., New York.)

Smoke Abatement

Any of the readers of THE AMERICAN CITY who are interested may receive a copy of the Revised Rules and Regulations of the Department of Smoke Regulation, Hudson County, N. J., governing details of fuel-burning equipment required for issuance of permits and certificates, dated March, 1935, by sending 3c postage to William G. Christy, Smoke Abatement Engineer, Court House, Jersey City, N. J.

Traffic

"The Rising Accident Rate" is discussed by William G. Eliot, 3d, Highway Economist, Division of Highway Transport, U. S. Bureau of Public Roads, in the March, 1935, issue of *Public Roads,* published by the Bureau. It is a paper presented before the annual meeting of the Mississippi Valley Conference of State Highway Departments, in Chicago, February 1, 1935. It considers that the margin of traffic safety is being reduced by factors over which the highway engineer has no control: the speed that goes with high-powered motors; repeal of prohibition; possibly the increased amount of travel. What the highway engineer *can* do, given the needed funds, is emphasized; and what licensing of drivers and legal regulation of speed should do is analyzed in the light of human nature and experience. 5 pp. Excellent illustrations. Price of issue, 10c. (Apply to Superintendent of Documents, Government Printing Office, Washington, D. C.)

Housing

A special edition of *Building America,* recently issued, contains "Photographic Studies of Modern Problems" in housing, showing where and how American people have lived in ancient times, and are living today in various degrees of the worst and the best in homes in city and country. It is an impressive, vividly presented collection of information, published by The Society for Curriculum Study and designed especially for classroom instruction. 28 photo offset pp. Single copies, 25c; special terms for annual subscription for eight issues. (Apply to Building America, 425 W. 123d St., New York.)

Planning

The Regional Plan Association, Inc. (400 Madison Ave., New York) has issued in its Information Bulletin No. 23 (April 8, 1935) a study of "Planning With Work Relief Funds and Personnel in the New York Region." This covers, in 20 quarto pages, a summary of work done during the past year; classification of projects; funds expected and men employed; organizing the counties for work projects; technical assistance to planning projects; limitation and future outlook. Maps, charts, tables. Published from time to time. $1.00 a year. (Apply to the Association.)

Maternal Mortality

"Comparability of Maternal Mortality Rates on the United States and Certain Foreign Countries" is a study of the effects of variations in assignment procedures, definitions of live births, and completeness of birth registration, by Elizabeth C. Tandy, D. Sc. Publication No. 229 of the Children's Bureau, U. S. Department of Labor. December 3, 1934. 24 pp. 5c. (Apply to Superintendent of Documents, Government Printing Office, Washington, D. C.)

Taxation

A model municipal report, "Why Pay Taxes," is suggested by the League of Wisconsin Municipalities in a 20-page pamphlet. It is designed for Wisconsin cities, and the sample figures given are averages for such cities. Figures and information for any particular city must be substituted. It has been found that such reports have been very successful in other cities in stimulating the payment of taxes. December, 1934. First copy, 20c; each additional copy, 10c. (Apply to the League, 114 N. Caroll St., Madison, Wis.)

Special Report No. 7 of the New York State Tax Commission, entitled "State and Local Taxation of Banks in the United States," has been prepared by Ronald B. Welch, Ph.D., New York State Fellow in Taxation at Yale University; Research Investigator, New York State Tax Commission; Research Assistant, Connecticut Special Tax Commission. 256 pp., plus folding inserts. The study is brought down to the opening of the year 1934. (Apply to Charles H. McTigue, Secretary, State Tax Commission, Room 523, State Office Bldg., Albany, N. Y.)

Municipal Reporting

"New Faces" is a 4-page photo offset reproduction of novel and attractive pages of annual reports from Vermont municipalities for 1934-1935, in graphic answer to the questions: "Rise or Fall—Indebtedness?; Up or Down—Delinquent Taxes?; What Price Relief?" This is a lineal descendant of the Midget Town Report of last year. The campaign for more readable municipal reports is the enthusiastic work of James P. Taylor, Secretary of the Vermont State Chamber of Commerce. He advocates a novel and distinctive cover, an unconventional title, brevity of material, with a wide use of charts, dramatic staging of significant symptoms or trends, frequent employment of comparisons as to years, the dressing-up and displaying of the contents. The State Chamber has also tackled the matter of state reports, in another four-page folder, playing up some of the items from state reports in a way to involve graphic methods. (Apply to the Vermont State Chamber of Commerce, Burlington, Vt.)

Civil Service

An authoritative report on the development and status of the merit system in the civil service of the state and municipal government of Illinois has been prepared for the Joint Committee on the Merit System, which is an affiliation of 30 civic organizations in Chicago and Cook County and throughout Illinois. The sub-committee which prepared the report (entitled "The Merit System in Illinois") was composed of Joseph Pois, governmental consultant, and Vice-President for Civic Activities of the City Club of Chicago; Edward M. Martin, Public Affairs Secretary of the Union League Club of Chicago; and Lyman S. Moore, staff member of the International City Managers' Association. 62 pp. (Apply to Joint Committee on the Merit System, Suite 6, N. Michigan Ave., Chicago, Ill.)

Other Reports Received

ERIE, PA.—Budget for 1935. 40 pp.

ERIE, PA.—Annual Report, Director, Department of Accounts and Finance, January 7, 1935. 66 pp.

HARTFORD, CONN.—Annual Reports, Board of Park Commissioners, and Division of Public Cemeteries, year ending March 31, 1934. 54 pp.

MARQUETTE, MICH.—Annual Reports, 1934. 83 pp.

MCPHERSON, KANS.—Annual Report, 1934. 32 pp.

LOWELL, MASS.—Annual Report, Finance Commission, 1934. 16 pp.

MICHIGAN.—Public Works Inventory and Program, March 1, 1935. 72 photo offset pp.

RICHMOND, VA.—Financial Report of the Comptroller, year ended January 31, 1935. 124 pp.

SALEM, MASS.—Annual Report, Park Department, 1934. 42 pp.

SPOKANE, WASH.—Annual Report, 1934. 110 pp.

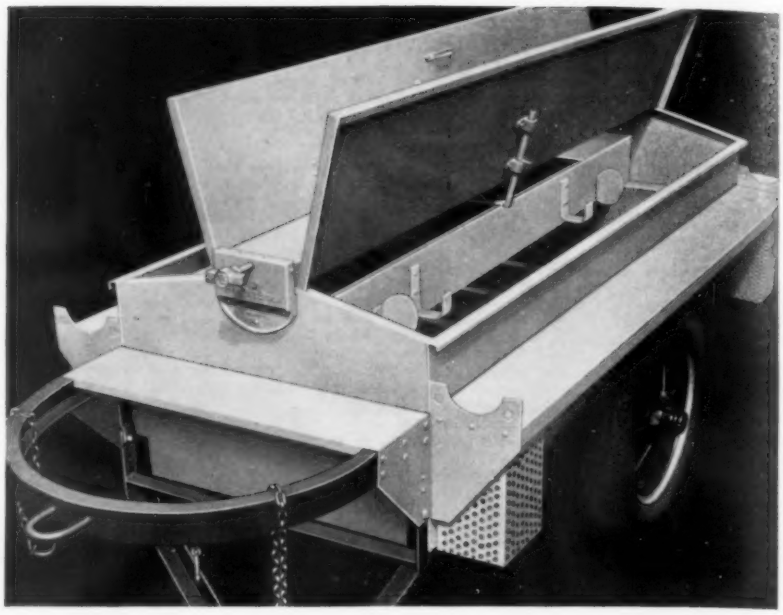
Protect Your
TOOLS
in the Littleford
HanDeeBox

When construction or maintenance gangs are equipped with the Littleford HanDeeBox, the foreman can keep an accurate check on all equipment.

This tool box is made of steel—it is actually lighter in weight than wooden boxes of equal capacity but is many times stronger.

The double covers are locked simultaneously by one lock which fastens them full length of the box—it is impossible to pry open the covers. It is just like keeping your tools in a Safe!

Let us tell you about the HanDee-Box. Send for complete information, now. It will cost you nothing.



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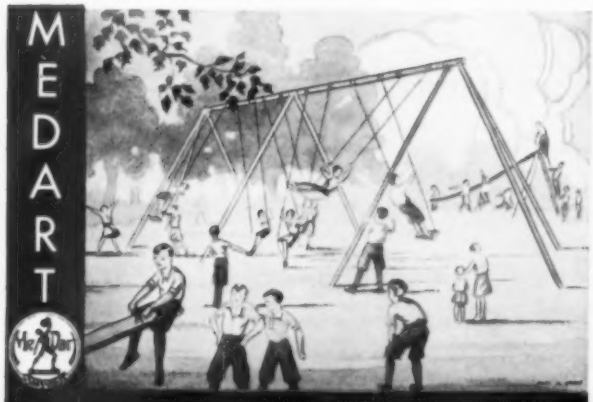
Road Maintenance Equipment
SINCE 1900
LITTLEFORD BROS. 500 E. PEARL ST. CINCINNATI, O.

MEDART



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When Swings, Slides, Giant Strides, See-Saws and all the other equipment available for modern play-yards, claim your attention—consider MEDART PLAYGROUND APPARATUS—especially if safety, service and durability concern you most. . . . Sixty-two years of manufacturing experience is reflected in every piece of MEDART *Tested* APPARATUS. . . . Let us help you plan your playground.

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3536 DeKalb Street ★ ★ ★ St. Louis, Mo.
Sales Engineers in all Principal Cities—Consult your Telephone Directory.

Bulletin "322"
tells you how to save your workers' time in marking road obstructions and detours, with a

MARTINDALE PORTABLE SIGNAL

This young man is showing you how easy it is to open one of these signals. Just press the button. Then snap on the flag and any desired wording.

Easy—speedy—effective—and economical.

The whole fits into small space in a tool-box when not in use.

Write for "322" today!

Martindale Electric Co.
1368 Hird Ave.
Cleveland, Ohio

CONVENTIONS—WHEN AND WHERE

(Figures in parentheses following the name of the convention city indicate the estimated attendance other than local)

MAY 6-10—CINCINNATI, OHIO.
American Water Works Association. Annual convention. (Hotel Netherland Plaza.) Secretary, Beekman C. Little, 29 West 39th Street, New York.

MAY 6-7.—BOSTON, MASS.
Massachusetts Safety Conference. Annual convention. Secretary, Lewis E. MacBrayne, 6 Beacon Street, Boston, Mass.

MAY 9-11.—SAVANNAH, GA. (900)
Association of County Commissioners of Georgia. Annual convention. Acting Secretary-Treasurer, Tate Wright, Athens, Ga.

MAY 9-10.—CENTRALIA, WASH. (200)
Association of Washington Cities. Annual convention. Secretary, Russell W. Barthell, University of Washington, Seattle, Wash.

MAY 13-16.—ATLANTA, GA.
National Fire Protection Association. Annual convention. (Atlanta Biltmore Hotel.) Managing Director, Franklin H. Wentworth, 60 Batterymarch Street, Boston, Mass.

MAY 16-18.—LEWISTON, IDAHO.
American Water Works Association—Pacific Northwest Section. Annual meeting. Secretary, Ernest C. Willard, 720 Corbett Building, Portland, Ore.

MAY 16-17.—ANNAPOLIS, MD. (125)
Maryland-Delaware Water and Sewerage Association. Annual conference. Secretary, A. W. Blohm, 2411 North Charles Street, Baltimore, Md.

MAY 17-18.—URBANA-CHAMPAIGN, ILL. (100)
Illinois Association of Sanitary Districts. Annual meeting. Secretary-Treasurer, G. H. Radebaugh, Urbana-Champaign, Ill.

MAY 20-23.—NEW YORK. (900)
National Association of Purchasing Agents. Annual convention. (Waldorf-Astoria Hotel.) Secretary-Treasurer, G. A. Renard, 11 Park Place, New York.

MAY 20-22.—CINCINNATI, OHIO.
Joint Conference on Planning. American City Planning Institute. Secretary, Howard K. Menhinick, Robinson Hall Annex, Cambridge, Mass. *National Conference on City Planning,* Secretary, Flavel Shurtleff, 130 East 22d Street, New York. *American Society of Planning Officials.* Executive Director, Walter H. Blucher, 850 East 58th Street, Chicago, Ill. *American Civic Association, Inc.,* Executive Secretary, Miss Harlean James, 901 Union Trust Building, Washington, D. C.

MAY 20-21.—HARRISBURG, PA. (100)
Pennsylvania Association of Planning Commissioners. Annual convention. Secretary-Treasurer, Arthur Cassell, City Planning Commission, Allentown, Pa.

MAY 24-25.—POUGHKEEPSIE, N. Y.
New York State Sewage Works Association. Spring meeting. Secretary-Treasurer, A. S. Bedell, Albany, N. Y.

MAY 24-25.—HERSHEY, PA. (50)
Pennsylvania Commercial Secretaries' Association. Annual meeting. (Hotel Hershey.) Secretary-Treasurer, R. W. Crist, Chamber of Commerce, Harrisburg, Pa.

MAY 27-31.—INDIANAPOLIS, IND.
Building Officials' Conference. Annual convention. Secretary-Treasurer, William F. Hurd, Commissioner of Buildings, Indianapolis, Ind.

MAY 27-28.—ALLENTOWN, PA. (250)
Pennsylvania State Association of Township Commissioners. Annual convention. Secretary-Treasurer, H. A. Fritschman, Eagle and Darby Roads, Upper Darby, Pa.

JUNE 3-5.—TORONTO, ONT. (450)
Canadian Public Health Association. Annual meeting. General Secretary, Dr. J. T. Phair, Spadina House, Toronto, Ont.

JUNE 3-5.—SYRACUSE, N. Y.
Conference of Mayors and Other Municipal Officials of the State of New York. Annual meeting. Secretary, William P. Capes, City Hall, Albany, N. Y.

JUNE 4-7.—WASHINGTON, D. C.
National Conference on Weights and Measures. Annual conference. Secretary, F. S. Holbrook, Bureau of Standards, Washington, D. C.

JUNE 4-7.—ST. LOUIS, MO. (350)
Smoke Prevention Association. Annual convention. Secretary, Frank A. Chambers, 1411 City Hall Square Building, Chicago, Ill.

JUNE 5-7.—MANKATO, MINN. (450)
League of Minnesota Municipalities. Annual convention. Executive Secretary, Morris B. Lambie, Director of the Extension Division, University of Minnesota, Minneapolis, Minn.

JUNE 7-8.—MONTREAL, QUE. (500)
American Public Welfare Association. Annual conference. Director, Frank Bane, 850 East 58th Street, Chicago, Ill.

JUNE 8-9.—MONTREAL, QUE. (150)
Community Chests and Councils, Inc. Annual meeting. Executive Vice-President, Allen T. Burns, 31st Floor, Commerce Building, New York.

JUNE 9-15.—MONTREAL, QUE. (5,000)
National Conference of Social Work. Annual conference. General Secretary, Howard R. Knight, 82 North High Street, Columbus, Ohio.

JUNE 13.—MONTREAL, QUE. (400)
Child Welfare League of America, Inc. Annual meeting. Executive Director, C. C. Carstens, 130 East 22d Street, New York.

JUNE 10-15.—LOS ANGELES, CALIF.
Institute of Government. Annual session. Executive Secretary, Walter E. Sykes, 3551 University Avenue, Los Angeles, Calif.

JUNE 14-15.—ATLANTIC CITY, N. J. (75)
Conference of State and Provincial Health Authorities of North America. Secretary, Dr. A. J. Chesley, State Board of Health, St. Paul, Minn.

JUNE 20-21.—WATERTOWN, S. DAK. (250)
League of South Dakota Municipalities. Secretary, Dr. G. R. Breckenridge, University of South Dakota, Vermillion, S. Dak.

JUNE 23-30.—PRAGUE, CZECHOSLOVAKIA.
International Housing Association. Congress. General Secretary, Prof. Franz Schuster, Hansa-Allee 27, Frankfort a/M, Germany.

JUNE 24-29.—DENVER, COLO.
American Library Association. Annual conference. Secretary, Carl H. Milam, 520 North Michigan Avenue, Chicago, Ill.

JUNE 24-28.—DETROIT, MICH.
American Society for Testing Materials. Annual meeting. (Book-Cadillac Hotel.) Secretary-Treasurer, C. L. Warwick, 260 South Broad Street, Philadelphia, Pa.

JUNE 24-26.—STATE COLLEGE, PA. (150)
Pennsylvania Sewage Works Association. Annual conference. Secretary, L. D. Matter, Kirby Health Center, Wilkes-Barre, Pa.

JUNE 25-26.—LOVELAND, COLO. (75)
Colorado Municipal League. Annual meeting. Secretary-Treasurer, Don C. Sowers, University of Colorado, Boulder, Colo.

JUNE 25-27.—NEW BEDFORD, MASS.
New England Association of Fire Chiefs. Annual convention. (Hotel New Bedford.) Secretary-Treasurer, John W. O'Hearn, 99 Main Street, Watertown, Mass.

JUNE 26-28.—STATE COLLEGE, PA.
Pennsylvania Water Works Operators' Association. Annual convention. Secretary-Treasurer, I. M. Glace, 506 South Office Building, State Capitol, Harrisburg, Pa.

JUNE 27-28.—CALGARY, ALTA. (100)
Union of Alberta Municipalities. Annual convention. (Hotel Palliser.) Secretary-Treasurer, J. E. Fraser, Wetaskiwin, Alta.

JUNE 30-JULY 5.—DENVER, COLO. (6,000)
National Education Association of the United States. Annual meeting. Secretary, Willard E. Givens, 1201 16th Street N. W., Washington, D. C.

JULY 3-5.—LOS ANGELES, CALIF.
American Society of Civil Engineers. Annual convention. Secretary, George T. Seabury, 33 West 39th Street, New York.

JULY 8-11.—ATLANTIC CITY, N. J.
International Association of Chiefs of Police. Annual convention. (Ambassador Hotel.) Secretary, George Black, Wilmington, Del.

JULY 11.—NORTH LITTLE ROCK, ARK. (100)
Arkansas Municipal League. President, Mayor U. E. Moore, North Little Rock, Ark.

JULY 16-20.—LONDON, ENGLAND.
International Federation for Housing and Town Planning. Congress. Organizing Secretary, H. Chapman, 25 Bedford Row, W. C. 1, England.

AUGUST 4-11.—EVANSTON, ILL.
National Institute for Commercial and Trade Organization Executives. Annual session. (Northwestern University.) Secretary, John N. Van der Vries, 607 First National Bank Building, Chicago, Ill.

AUGUST 21-23.—AMHERST, N. S. (250)
Union of Nova Scotia Municipalities. Annual convention. Secretary, Hon. Arthur Roberts, Bridgewater, N. S.

AUGUST 22-23.—PITTSBURGH, PA.
American Water Works Association—Central States Section. Annual meeting. Secretary, H. K. Nelson, 2435 Koppers Building, Pittsburgh, Pa.

AUGUST 22-23.—WILLIAMSPORT, PA. (250)
League of Cities of the Third Class in Pennsylvania. Annual convention. Secretary, Herman A. Early, City Hall, Harrisburg, Pa.

AUGUST 26-SEPTEMBER 9.—TORONTO, ONT.
Ontario Municipal Association. Annual meeting. Secretary-Treasurer, H. L. Brittain, 137 Wellington Street W., Toronto, Ont.

AUGUST 27-29.—UTICA, N. Y. (225)
New York State Association of Chiefs of Police. Annual convention. Secretary-Treasurer, James L. Hyatt, 503 Western Avenue, Albany, N. Y.

AUGUST 28-30.—PHILADELPHIA, PA.
National Shade Tree Conference. Annual convention. Secretary-Treasurer, Dr. R. P. White, N. J. Agricultural Experiment Station, New Brunswick, N. J.

SEPTEMBER 19-20.—KENOSHA, WIS. (600)
League of Wisconsin Municipalities. Annual convention. Secretary, Frederick MacMillin, 114 North Carroll Street, Madison, Wis.

SEPTEMBER 24-27.—KNOXVILLE, TENN. (700)
International Association of Fire Chiefs. Annual convention. Secretary, James J. Mulcahey, Yonkers, N. Y.

OCTOBER 7-10.—MILWAUKEE, WIS.
American Public Health Association. Annual meeting. Executive Secretary, Dr. Reginald M. Atwater, 50 West 50th Street, New York.

OCTOBER 14-16.—CINCINNATI, OHIO.
American Society of Municipal Engineers. International Association of Public Works Officials. Joint Conference. (Netherland Plaza Hotel.) Executive Director, Donald C. Stone, 850 East 58th Street, Chicago, Ill.

OCTOBER 14-17.—HOUSTON, TEXAS.
American Water Works Association—Southwest Section. Annual convention. Secretary-Treasurer, Lewis A. Quigley, Fort Worth, Texas.

OCTOBER 14-16.—RICHMOND, VA. (200)
International Association of Municipal Electricians. Annual convention. Secretary, W. H. Harth, Columbia, S. C.

OCTOBER 15-18.—SAN ANTONIO, TEXAS. (250)
National Association of Public School Business Officials. Annual convention. Secretary, John S. Mount, Inspector of Accounts, State Department of Public Instruction, Trenton, N. J.

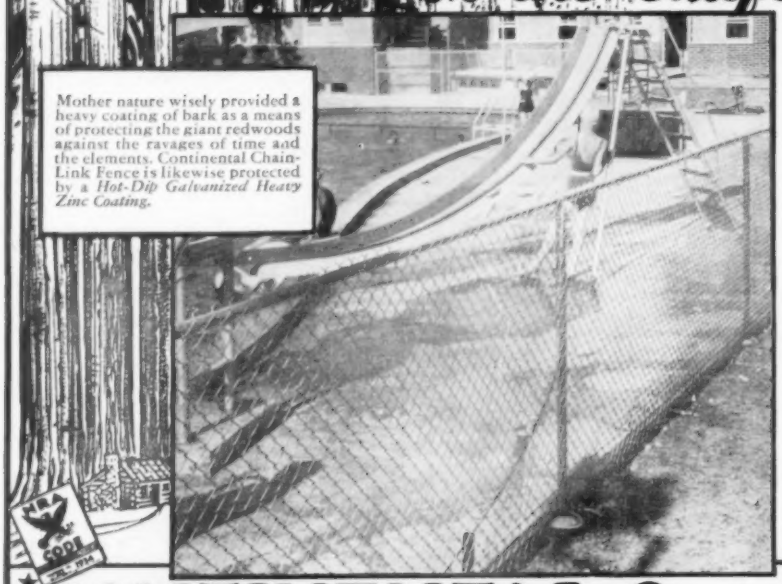
OCTOBER, THIRD WEEK OF.—ATLANTIC CITY, N. J.
Pennsylvania Water Works Association. Annual meeting. (Haddon Hall.) Secretary, Dr. F. Herbert Snow, 327 Telegraph Building, Harrisburg, Pa.

OCTOBER 23-26.—SAN DIEGO, CALIF.
American Water Works Association—California Section. Annual convention. Secretary-Treasurer, J. E. Phillips, 207 South Broadway, Los Angeles, Calif.

NOVEMBER 4-6.—DURHAM, N. C.
American Water Works Association—North Carolina Section. Annual convention. Secretary, M. F. Trice, State Board of Health, Raleigh, N. C.

NOVEMBER 6-8.—DES MOINES, IOWA.
American Water Works Association—Missouri Valley Section. Annual meeting. Secretary, Earl L. Waterman, University of Iowa, Iowa City, Iowa.

NATURE WAS KIND
To the California Redwoods



Mother nature wisely provided a heavy coating of bark as a means of protecting the giant redwoods against the ravages of time and the elements. Continental Chain-Link Fence is likewise protected by a *Hot-Dip Galvanized Heavy Zinc Coating.*

Hot-Dip Galvanized After Fabrication, the most modern method of protecting steel fence from corrosion and rust

● Continental Chain-Link Fence is designed to meet the most exacting requirements where Beauty, Dignity, Strength, Utility and Endurance must combine. Erected by our experienced staff of fence engineers, Continental Chain-Link Fence presents a first line of protection for valuable property. When erected properly it will last a lifetime and is available in three popular styles with or without barb wire at the top. Sold completely erected or material only. Our engineering staff is at your service. *Accurate Quotations gladly given without obligation.* Write us now about your fence problems.

CONTINENTAL STEEL CORP.
Kokomo, Indiana
Distributors in all principal cities

CONTINENTAL *Chain-Link* FENCE
OFFERS LOWEST COST PER YEAR OF SERVICE

"18° below to 110° above"

"The Master Traffic Signal installed at Millard and Washington Sts., Sept. 25, 1933, has had a severe test during the past year under heavy truck traffic and with temperature ranging from 18 degrees below zero to 110 degrees above zero.

"The signal has functioned very satisfactorily and we are well pleased.

"The order recently placed with you will be followed up by more in the near future."

(Signed)
ROBERT C. WEBER
MAYOR OF CITY OF SAGINAW
(Letter 9-25-34)

Write for circular describing the MASTER TRAFFIC SIGNAL. The signal that lies down flat when run over, then springs up to warn the next comer.

SAFE! DEPENDABLE! DURABLE!

SAGINAW-CORNELL TRACTOR CO.
Sole Distributors
Water & Bristol Sts. Saginaw, Mich.

THE
"Murdock" Outdoor Drinking Fountain
(Anti-freezing)

Positively the most practical fountain for public service obtainable. Highly endorsed by over 800 municipalities alone.

Splendid for
PARKS, PLAYGROUNDS, ATHLETIC FIELDS, RECREATION CENTERS, OPEN SQUARES, PUBLIC STREETS

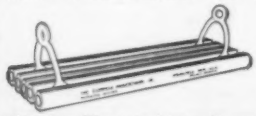
Write for complete information to

The Murdock Mfg. & Supply Co.
CINCINNATI, OHIO
Makers of outdoor water devices since 1853

EVERWEAR OFFERS THE SAFEST MERRY-WAVE-STRIDE

Fully covered by patents which include the many exclusive safety features, this Merry-Wave-Stride insures complete safety to the children in your parks and recreation grounds. EverWear Merry-Wave-Stride gives more action and exercise.

You owe it to your children to install the safest equipment—EverWear's Patented Stride. Ask for complete details.



USE SPRING RUBBER SAFETY SEATS FOR YOUR SWINGS

An ingenious arrangement of rubber and steel, patented by EverWear, which eliminates all the hazards of former type swing seats.

This EverWear seat is soft, springy, resilient, has remarkable safety features, strength and durability. Priced low enough to meet your budgets. Write for details. Ask for complete new catalog.

THE EVERWEAR MFG. CO.
SPRINGFIELD, OHIO, U. S. A.

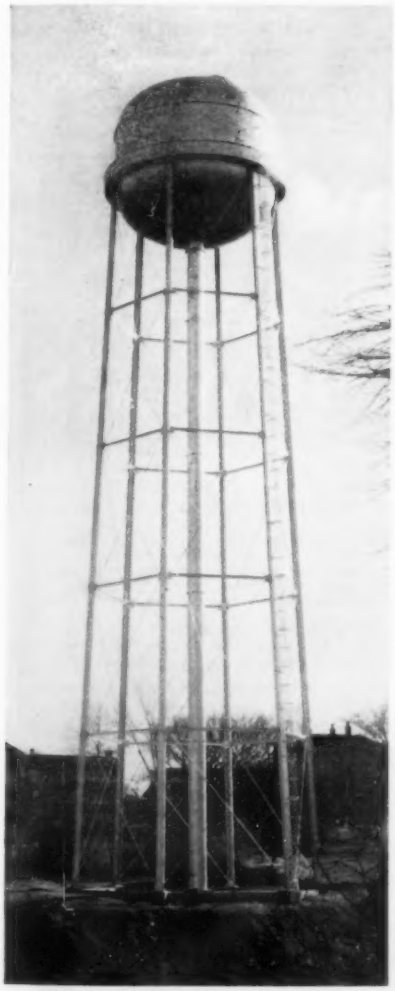
NEWS AND ILLUSTRATIONS

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

Modernizing the Water System at Fort Thomas, Ky.

A program of plant modernization for the Fort Thomas water system, recently completed, consists of improvements at the Alexandria Pike pumping station, the construction of a new elevated steel tank, the synchronization of this new tank with the existing tank by means of a control valve and provision for automatic control of pumps, with respect to the water level in the new tank. This water system serves a population of approximately 10,000. The new 275,000-gallon capacity elevated steel tank, built by the Pittsburgh-Des Moines Steel Co., Pittsburgh, Pa., was located in the heart of the business district of the city at approximately the load center of the entire water system. It is double ellipsoidal in form, the high water line being well up in the roof. The tank proper is 38 feet in diameter, with a total distance between the upper and lower water levels of 30 feet 10 inches. To harmonize the general appearance of the structure, a solid plate balcony handrail was provided and all column cover plates were placed on the outside rather than on the inside of the columns.

These improvements resulted in an increased over-all efficiency of the pumping equipment, and permitted the use of the full capacity of both the old and new tanks, thus increasing the total storage capacity from 65,000 gallons to 355,000 gallons.

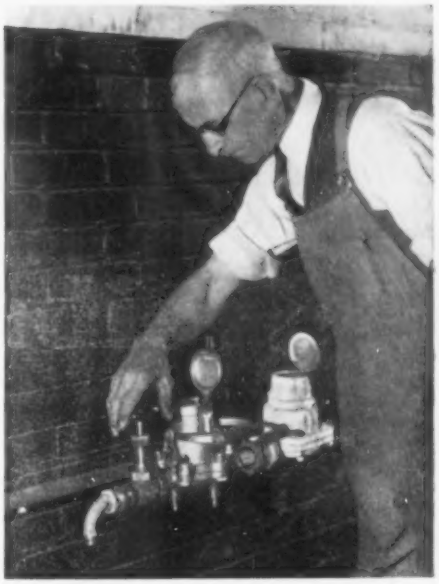


THE NEW FORT THOMAS WATER TOWER

Testing Water Meters

The accompanying illustration shows the testing of a water service meter with a Buffalo portable testing water meter made by the Buffalo Meter Co., 2902 Main St., Buffalo, N. Y. This meter allows service meters to be tested for accuracy without removing them from the pipe line. To test a meter in service, shut off the water at the stop and waste cock; disconnect the meter on the outlet end, attach the testing meter direct to the service meter by means of the universal fitting; open the control valve of the testing meter; turn the water on slowly at the stop and waste cock, allowing several cubic feet to run so as to expel all the air from the meters; then shut off the valve so as to stop the first hand of the service meter exactly at 0, turn the frictional set-back hand of the testing meter to 0. Run the desired test quantity through both meters. The difference between the two readings indicates the service meter error.

Where a small number of meters are to be tested, the portable testing meter serves very satisfactorily. Further information on this portable testing meter will be sent by the manufacturers on request.



TESTING A WATER METER SERVICE WITH A BUFFALO PORTABLE TESTING WATER METER

Joint Study of the Effect of De-Airing on Properties of Vitrified Paving Brick

The U. S. Bureau of Public Roads and the Research Bureau maintained by the National Paving Brick Association at the Ohio State University Engineering Experiment Station are cooperating in a study of the effect of de-airing on the properties of vitrified paving brick. It is proposed to investigate the properties of paving brick manufactured by the de-airing process in a number of plants located in the East, Middle West, and South, as compared with the properties of brick from the same plants which have not been de-aired.

The investigation will include a comparison of the quality of both the de-aired and un-de-aired brick from a number of plants in Pennsylvania, Ohio, Indiana, Illinois, and Tennessee. A sample representing each of three degrees of burning, dark, medium and light, and from both de-aired and un-de-aired stock will be selected from each plant. Samples will be selected jointly by representatives of the Bureau of Public Roads and the National Paving Brick Association. It is probable that as a result of this investigation it will be decided whether standard tests for de-aired brick are advisable, and the test requirements.

Orchard with Wallace & Tiernan Twenty Years

April 15 was the twentieth anniversary of William J. Orchard's connection with the Wallace & Tiernan Co., Inc., and the occasion was celebrated in typical Wallace & Tiernan style. Our friend Bill was presented by his fellow employees with a very handsome platinum watch and chain, and a wonderfully happy time was had by all.

Our reporter advises us that at the time the presentation was made, Bill Orchard was (for the first time in his life) unable to speak for several moments. When he did find his voice, his acknowledgment of the thoughtfulness of his fellow workers was thoroughly heartfelt, and ended in a very optimistic prediction for the future of the Wallace & Tiernan Co., as well as for American business in general.

At last!

CHAIN LINK FENCE WITH A COATING OF CHEMICALLY PURE ZINC

BETHANIZED WIRE

NOW INSURES LONGER LIFE FOR

ANCHOR *Fences*

THE *purer* the zinc coating—the more uniform it is on the wire—the longer the life of your chain link fence. Now comes Bethanizing—an entirely new process—applying to the steel core a zinc coating which is absolutely uniform, perfectly smooth, extremely ductile and *chemically pure!* Result: Chain Link fence which stands up years longer—even in atmospheres heavy with salt, soot and other corroding agents.

City Officials will appreciate the extra years of service and improved appearance which Bethanized Wire gives to Anchor Chain Link Fence. The Bethanized coating of *pure* zinc can be made as heavy as you wish—with extra heavy coatings where needed for extra corrosive atmospheres.

Add years to the life of your fence with Anchor Bethanized chain link fabric. Get the facts! Anchor Fences of Bethanized Wire are made in many different types and heights to meet every municipal requirement. They are readily available to you through our nation-wide sales and erecting service. Mail the coupon for booklet giving full information—now!

MAIL THE COUPON NOW

ANCHOR POST FENCE COMPANY
6621 Eastern Avenue, Baltimore, Md.

Please send me your free book about Anchor Fences of Bethanized Wire for Municipal property.

Name .....

Address .....

Weeds stay dead

1 in 1

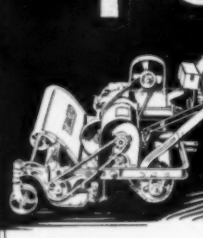
PENETRATION: the reason why Dolge Weed-Killer gives you a quicker, longer-lasting kill. Gets into the roots—completely destroys the growth. Weeds stay dead because they are dead. One application is usually enough for one whole year—1-in-1. Dilutes in water 1-to-40. Gallon so diluted covers 1,250 square feet on the average. In 1-to-20 dilution, kills rank, deep rooted growth. Powerful. Economical.

Moles vanish in 2 days when you use Nomole, chemically treated mole food. Punch holes in ridges, fill with Nomole. They devour it, die.

Dolge makes a complete line of ground maintenance materials. Write for new manual—absolutely FREE.

THE C. B. DOLGE COMPANY
MAIN OFFICE AND LABORATORIES **WESTPORT, CONNECTICUT**

POWER LAWN MOWERS



Planned Supervision

GRASS-PLANT growth slows up when the soil temperatures climb higher during the hot summer months.

Accompanying this reaction, obnoxious weeds such as buckhorns, plantains and dandelions grow profusely. Many heretofore well-groomed lawns become the victim of this condition.

Longer cuts of even grass are recommended when approaching this period. Adjusting the cutting unit to provide variations of height cut is a simple operation for a Coldwell power mower.

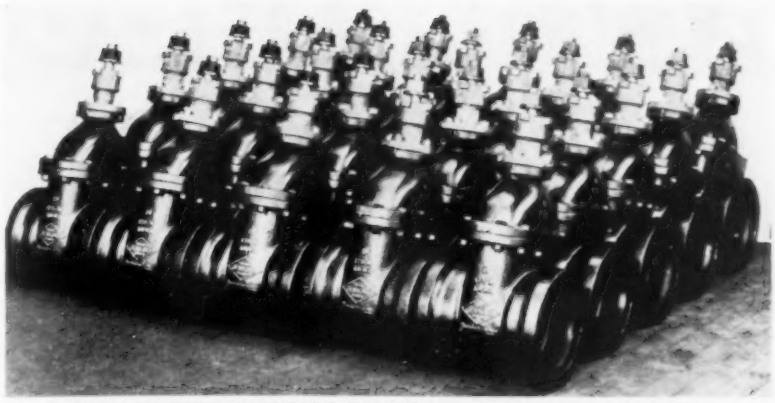
Conserving the moisture content by a light rolling of the turf while cutting the grass, gently closes the pores of the soil and retards evaporation by the wind and sun.

Machines are powered with a water and fan-cooled motor. A riding sulky with a comfortable seat and foot rest can be furnished.

DEMONSTRATIONS ARRANGED

Descriptive catalog ACi-31 sent upon request

COLDWELL LAWN MOWER CO.
NEWBURGH, N.Y.



THE 25 JENKINS IRON-BODY DOUBLE-DISC GATE-VALVES RECENTLY SUPPLIED TO A NEW ENGLAND CITY

New England City Installs Water-Works Valves

Jenkins Bros., 80 White Street, New York, has recently supplied to a large New England city 25 water-works valves. These valves are the regular Jenkins iron-body, double-disc gate-valves with hub end, especially designed for water-works service. They are fitted with all-bronze stuffing-box assemblies which can be tightened from the street level by means of a key without necessitating any digging and consequent repaving.

Boye Reelected President of Asphalt Institute

At the annual meeting of the Board of Directors of The Asphalt Institute, representing four-fifths of the major producers of the United States and Canada, B. L. Boye was reelected President. Mr. Boye has been with Socony-Vacuum for 35 years and now heads that company's asphalt and fuel oil activities.

Other officers elected were as follows: Vice-Presidents, A. M. Maxwell, Standard Oil Co. of Ohio; Leroy M. Law, Shell Petroleum Corp.; J. A. Blood, Standard Oil Co. of California; and T. M. Martin, Lion Oil Refining Co. of Arkansas. W. W. McFarland, President of Warner-Quinlan Co., was reelected Secretary, and Herbert Spencer, Standard Oil Co. of New Jersey, was reelected Treasurer. The Board of Directors renamed C. W. Bayliss, Barber Asphalt Co., to be Chairman of the Executive Committee, and elected McFarland, Martin and Blood as the other committee members, Mr. Boye being a member ex-officio. J. E. Pennybacker continues as Managing Director.

The Institute announced the opening of a regional office in Cincinnati; additional regional offices are also maintained in Washington, San Francisco, and Kansas City.

Howes Joins Worthington

As a result of increased activity in its diesel and gas engine lines, Worthington Pump & Machinery Co., Harrison, N. J., has amplified the supervision of business in these lines in its eastern district by creating the Eastern Oil Power Division under the field management of Ray L. Howes, with headquarters at Worthington's New York City office at 2 Park Avenue.

Howes, who is well known in the diesel engine field, has for the past 22 years been connected with the diesel sales division of Fairbanks, Morse & Co.

Through Worthington's field organization in the territories of the district offices of Boston, New York, Philadelphia, Washington and Atlanta, Howes will supervise diesel engine sales in these territories.

Changes in Personnel of Robert W. Hunt Co.

James C. Ogden, formerly Vice-President in charge of Robert W. Hunt Company's eastern and foreign activities at New York, has been appointed President of this company to succeed C. B. Nolte, who resigned to accept the presidency of the Crane Company. Mr. Ogden has been actively engaged with this organization for the past 35 years.

F. M. Randlett has been appointed Vice-President and General Manager. Mr. Randlett has been Pacific Coast Manager of the company at San Francisco since 1926.

This company conducts a national and international engineering inspection, testing and consultation service, with general offices in Chicago, Ill.

Lehman Elected Chairman of Board of Blaw-Knox

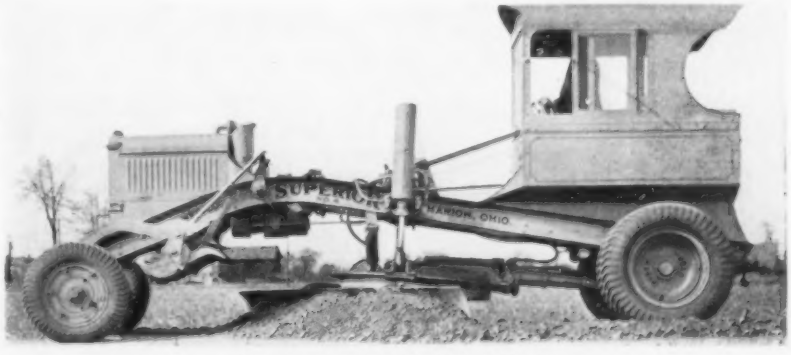
Directors of the Blaw-Knox Co., Pittsburgh, Pa., have elected Albert C. Lehman to the office of Chairman of the Board. Mr. Lehman has been associated with this company for thirty years. Irvin F. Lehman has been elected President, and Frank Cordes Senior Vice-President. The following officers were reelected: Chester H. Lehman, Vice-President; Robert F. McCloskey, Vice-President; George L. Dumbauld, Treasurer; H. B. Loxterman, Secretary; B. L. Hirshfield, Chairman, Finance Committee; Paul W. Keim, Assistant Treasurer; H. S. Strassburger, Assistant Treasurer and Assistant Secretary; and P. A. McCullough, Comptroller.

A New Motor Grader

A motor grader embodying many new features has been announced by the Huber Manufacturing Co., Marion, Ohio. Instead of the conventional design with the tractor mounted in the rear and with drawbars attached to the front of the frame as in a drawn grader, this new Huber Superior No. 4 model has the engine mounted towards the front of the frame, the power being transmitted to the rear axle assembly through a shaft, similar to the method employed in heavy truck construction. Instead of drawing the blade by drawbars attached to the front of the frame, the blade is pushed, bulldozer style, by a heavy tube attached direct to the rear axle housing.

This design is claimed to give a better-balanced grader with more traction and less liability to side slip. The blade may be used in any position right or left, from straight across to horizontal with the frame, and it will ditch on either the right or the left side without changing the position of the blade on the hangers. It has a side shift of 36 inches and a blade clearance of about 18 inches when fully raised.

Other features of the grader are a heavy-duty 6-cylinder engine, folding scarifier, dual steering, differential lock, direct-connected hydraulic control, etc. This grader is now available in the 12,000-pound class, but both smaller and larger sizes are being developed.



THE NEW HUBER MOTOR GRADER

MUD-JACK METHOD

Curb and gutter depression before application of Mud-Jack Method

No. 10 N. E. C. Mud-Jack

Above curb and gutter after elevation by the Mud-Jack method—Reconstruction cost has been saved

Saves the Curb, Gutter and Sidewalk

The Mud-Jack method of raising concrete curb, gutter, walks, and streets has solved the problem of reclaiming and correcting sunken concrete slab. It is the modern method to increase the life of concrete. Curb, gutter, walks and streets can be raised to original grade. All of this without reconstruction — the saving accomplished pays for the machine in less than one season's operation — in addition to the protection of the original investment.

Write for Mud-Jack Bulletin AC

KOEHRING COMPANY

Milwaukee Wisconsin

For Raising Concrete Curb, Gutter, Walks, Street

GET A BETTER JOB AT LESS COST

With Hotstuf

WRITE US FOR BULLETINS

MAINTENANCE EQUIPMENT
ASPHALT HEATERS
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TRAILER TOOL BOXES FOR SERVICE DEPARTMENTS

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Frankfort New York

Cut Mowing Costs . . . *with a* DETROIT MOTOR SCYTHE

- Here is the most economical and easily handled cutter on the market.
- It goes anywhere, cuts anything, and enables one man to do the work of four or more with hand scythes.
- It has a 36-inch sickle driven by a powerful one-cylinder gasoline motor and is mounted on a free running 30-inch wheel, allowing it to be backed up, pivoted sharply, or tilted up or down slopes similar to a wheelbarrow.
- It is now being produced by a recognized leader among mower manufacturers and during over four years of service, thousands of users have testified to its economy and dependability.

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Write for prices and Bulletin No. 10

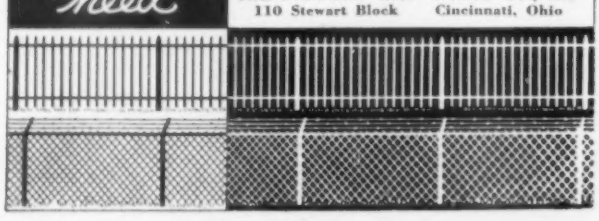
FENCE *for every* PUBLIC PROPERTY *need*

Stewart FENCES

IRON AND CHAINLINK WIRE

New Catalog Sent Upon Request

THE STEWART IRON WORKS CO., INC.
110 Stewart Block Cincinnati, Ohio



LARGEST in PENNSYLVANIA

1600 ROOMS WITH BATH

Rates from $3.50 SINGLE - $5.00 DOUBLE

- In the heart of Downtown Pittsburgh
- The Best Address
- Four Restaurants

HOTEL WILLIAM PENN
PITTSBURGH
GERALD P. O'NEILL, General Manager

New Manager for Morristown Water Department

Arthur T. Clark, a water engineer of wide experience for the past 28 years, has been appointed to take charge of the Morristown, N. J., water plant. Mr. Clark's experience has been along lines of construction and designing of all types of water plants, filter systems, pumping stations, developing of new systems and laying of mains. He was in charge of the Greenwich, Conn., and Port Chester, N. Y., plants until recently. From 1907 until 1916 he was assistant engineer to Robert E. Horton, consulting hydraulic engineer, of Albany, N. Y., and for the next ten years was Superintendent and Engineer for the Municipal Commission of Herkimer, N. Y., in charge of water-electric, police-fire and sewer departments. He has been engineer and local manager for the South Bay Consolidated Water Co., which operated eight plants and was taken over by the Federal Water Service in 1930, and he has been chief engineer for Supervising Engineers, supervising operations for Community Water Service Co., of New York.

Grader Used to Improve Large Parking Space

Improvements on the north bank of the Deep Water Terminal at Stockton, Calif., are being carried on through the cooperation of the Stockton Junior Chamber of Commerce, the city of Stockton, and R. G. Le Tourneau, Inc., Stockton, Calif., the latter providing the equipment for the actual work. On this project an Allis-Chalmers Model L tractor and a Le Tourneau Carryall scraper are being used. When completed, the work will provide parking space from which large crowds may view the Outboard Regatta course in the Stockton harbor and also look over the activities of the docks and warehouses on the opposite bank. The accompanying photograph shows the equipment at work.

GRADING AT THE DEEP-WATER TERMINAL AT STOCKTON, CALIF.

Engineers Announce Traffic and Transportation Department

Jensen, Bowen and Farrell, Engineers, of Ann Arbor, Mich., have announced the establishment of a Traffic and Transportation Department for the purpose of engaging in street and highway traffic consulting work and general highway transport engineering. This department is headed by D. Grant Mickle, who was formerly associated as a Research Fellow with Dr. Miller McClintock, Director of the Erskine Bureau for Street Traffic Research at Harvard University.

New Public Works Department Manager for Autocar Co.

The Autocar Co., of Ardmore, Pa., manufacturer of heavy-duty trucks, has announced the appointment of E. B. Sinclair as Manager of the Public Works Department, with headquarters at the Autocar Branch in New York City. Sinclair was previously connected with the Indiana truck organization and later was in charge of public works sales for Brockway and is well known to state, county and municipal officials throughout the East.

Municipal Signal Superintendents to Hold Convention

AN open convention of all persons interested in municipal fire-alarm, police-signal and traffic signals will be held in Poughkeepsie, N. Y., June 20-22, under the auspices of the Asociated Municipal Signal Service and its group members. A cordial invitation is extended to all municipal signal superintendents, fire and police chiefs and commissioners.

Richardson Appointed Executive Secretary of Sandusky Chamber of Commerce

The Sandusky, Ohio, Chamber of Commerce has announced the appointment of C. H. Richardson as Executive Secretary, effective April 1. Mr. Richardson has been Director of the Department of Public Welfare for the city of Sandusky, which he organized in 1932. Prior to that he was identified with a number of manufacturing plants in Sandusky and Bucyrus in official capacities as Manager and in charge of sales and advertising.

Markers That Almost Talk

ASKED if he had ever seen the traffic markers shown in the accompanying views from Rochester, an engineer replied offhand: "Oh, yes, I've seen them in a number of upstate towns; they look so different from the pavement you can't help seeing them." That of course is about the highest compliment that could be paid to a traffic sign, for a traffic sign is essentially an alarm signal and its first requisite is to catch the attention of all persons in the danger area.

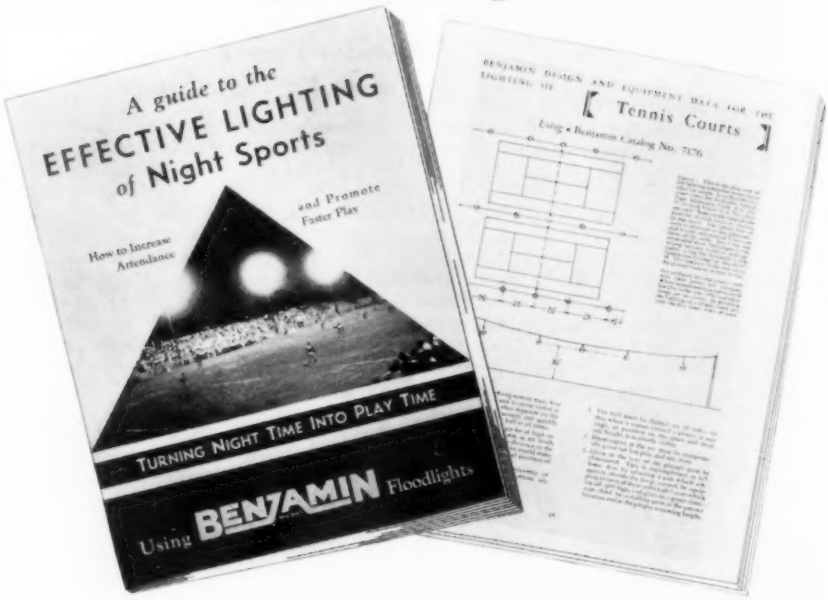
In the top picture, the driver's eye catches the SLOW, picks up the white line and immediately recognizes the justification for the warning and instinctively feels a greater respect for traffic signs. The lower picture shows a crossing in the middle of the block. So sharply defined are the lines that there is the illusion of an intersection. This is obviously a place for pedestrians to cross, and a place for motor vehicles to stop when persons in the danger area.

These are Wamblu letters and markers, made of heavy cotton fabric impregnated with special waterproof paint and coated with adhesive on the underside. Wamblu Corp., 1379 Ridge Road, Rochester, N. Y., guarantees them for the full traffic season.

LIGHTING

for

Parks and Playgrounds
Soft Ball Fields
Tennis Courts
Baseball Fields
Football Fields
Swimming Pools
Gymnasiums
Pavilions
Refectories
Greenhouses
and other
Community Amusement
and Recreational Buildings



Send for this New Bulletin!

A 24-page Guide to the Effective Lighting of Night Sports. Numerous illustrations of night lighted fields and helpful engineering data on the actual layout of the lighting installation for various sports and recreational areas.

BENJAMIN "PLAY-AREA" FLOODLIGHT
Specially designed for the economical and effective floodlighting of playgrounds and athletic fields.

Benjamin lighting equipment includes both open type floodlights and enclosed projectors for outdoor lighting and a wide range of reflectors and other lighting fixtures for the correct illumination of building interiors of every type. Catalog 26, just off the press, gives 288 pages of illustrations and descriptive material and easy to read technical data on correct lighting. Copy will be sent on request.

BENJAMIN "TURNLOX" R L M DOME REFLECTOR
One of the many types of Benjamin reflectors for meeting the specific requirements of indoor and outdoor lighting.

BENJAMIN ELECTRIC MFG. CO., Des Plaines, Ill. *New York, Chicago, San Francisco*

BENJAMIN
TRADE MARK

Outdoor Lighting

A Section of *The American City*
Devoted to the Lighting of Streets, Highways, Bridges, Airports, Athletic Fields and Parks, and the Floodlighting of Public Buildings

"Color Music" for Public Parks

By **R. B. HUNTER**
Development Engineer, Cutler-Hammer, Inc., Milwaukee, Wis.

MANY who viewed the illumination effects at the Century of Progress in 1933-34 possibly do not realize that the apparatus required to obtain these effects is comparatively simple and has been standardized so that it can readily be adapted to provide mobile color effects which will greatly enhance the beauty of existing parks, towers, fountains, lagoons, waterfalls and public buildings. Public interest in these displays is possibly also underestimated by city planning authorities.

At Longwood Farms, the private estate of Pierre Du Pont, near Wilmington, Del., there is an illumination display which, in the opinion of those qualified to speak, has no equal in this country or abroad. Last summer more than 19,000 persons paid an average of 50 cents to view the Longwood displays.

To mention only one other installation of this type, we may note the illumination exhibit at Jackson, Mich., dedicated to the public by Captain Sparks, of that city. When this display was first opened to the public, there were as many as 8,000 to 10,000 visitors per night; this interest has been well maintained. *It is the writer's belief that a properly organized display of this type could be made self-sustaining in every city of* 50,000 *population.* There is no reason why this type of entertainment should not receive the popular response that has been accorded to outdoor operas, band concerts, carillons. Almost every municipality already has some beauty-spot, such as a sunken garden, a lake, or a waterfall, whose beauty and attractiveness can be multiplied by color illumination. Floodlights with colored lenses can readily be arranged to illuminate these areas adequately. It is of the utmost importance, however, that the control mechanism for blending these colors be flexible so that the changing hues will be ever-pleasing.

The essential elements of this control are:

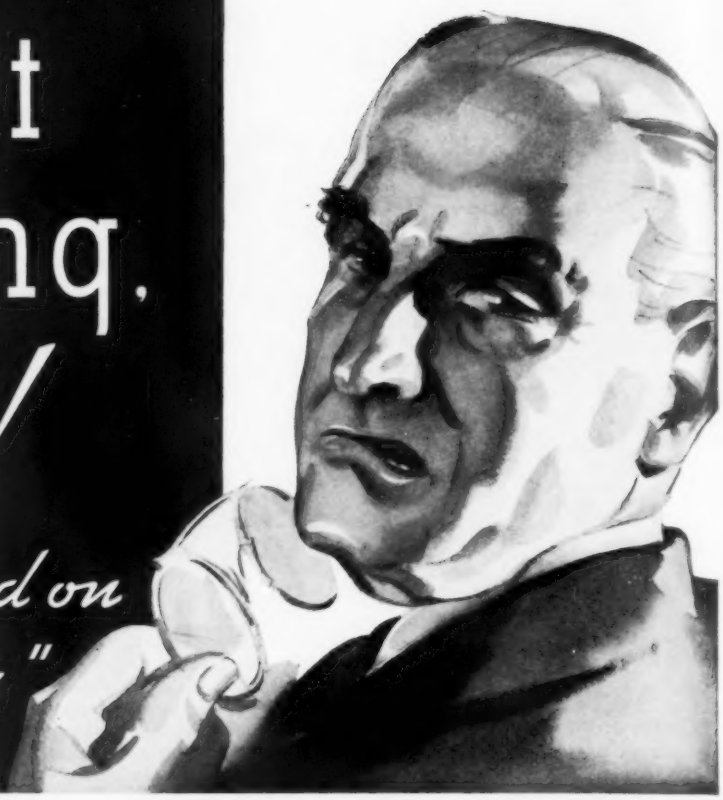
1. A dimmer for controlling the lamp voltage.

2. A control board which will permit setting up by trial many different combinations of colors to determine a pleasing and harmonious cycle and then provide for repetition of this cycle as long as may be desired, with means for changing readily to another cycle which has previously been set up by trial in the same manner.

By glancing at this board, the operator in charge of the lighting effect can readily determine the intensity of each

TYPICAL PLACE FOR COLOR DISPLAY ON LARGE SCALE; SMALLER ONES ALSO EFFECTIVE

"street lighting, bah! you don't read on the streets"



● Few people realize the vital importance of street lighting in everyday safety and welfare. Few also realize that they pay for good street lighting *whether they get it or not!*

It has been proved time and again that increased per capita expenditures in street lighting results in decreased per capita economic losses.

Two groups of cities were analyzed. The first group increased street lighting budgets 11%, or 9c per capita, and experienced a 25% reduction in night fatalities and an economic saving of $2.07 per capita. The second group decreased street lighting budgets 14%, or 19c per capita, and suffered a 7.6% increase in night fatalities at an economic cost of 69c per capita.

Any "saving" that results in loss of human life and property damage must be condemned. While, by the same standard, an expenditure that saves human lives and property expense is the most worth-while expenditure in the world.

Westinghouse, world's largest maker of lighting equipment, provides a complete line of street lighting equipment unsurpassed in durability and efficiency. Westinghouse also maintains an advisory staff of skilled street lighting engineers who are always at your service. For complete details, write Westinghouse Electric & Mfg. Co., Lighting Division, Edgewater Park, Cleveland, Ohio.

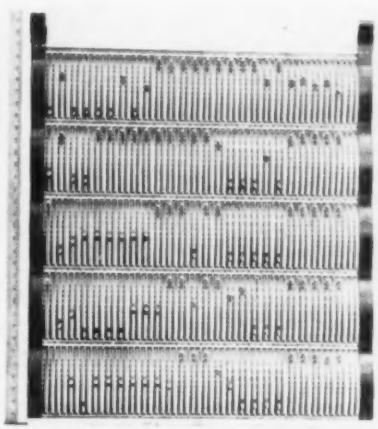
WHEN YOU THINK OF *Lighting* THINK OF

Westinghouse

circuit at any instant. By means of the control board it is a simple matter to set the timer in operation and observe the results obtained as the cycle continues, and then to shift any lever slightly to increase or decrease the intensity of any circuit if the effect is not all that is desired.

It Must Be Thought Out

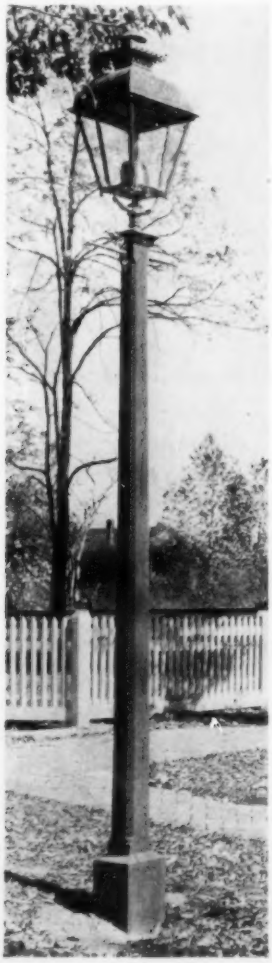
In the engineering of a mobile illumination control system careful consideration must be given to the length of the cycle; that is, to the frequency of repetition of identical effects, and to the rate of change of illumination. In general, it has been found that the rate of change of illumination should be quite rapid in order to hold the attention of the observers. This is especially true if the audience (or to coin a word shall we say "optience?") is fairly close to the display. If, however, the display is spread over a considerable area and if the "optience" is at a considerable distance from the display, the rate of change should be less rapid. If the illumination is performed in conjunction with a band or orchestra concert, the rate of change of illumination should be slower and the length of cycle longer.



A PROGRAM PLATE

Various Selections Can Be "Played"

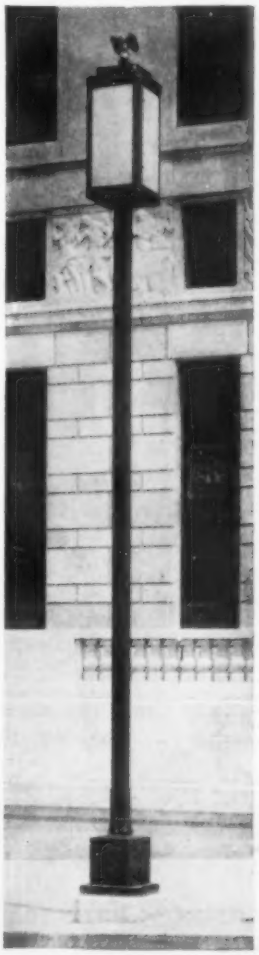
In the art of illumination control it is important to record harmonious displays just as it is important in the art of music to record orchestral or other instrumental compositions. A simple method of recording these harmonious cycles is to use the program plates shown herewith. After the cycle has been set up on the control board by means of a simple dowel pin arrangement, the stops on the program plate are adjusted to correspond to the position of each control lever. Several program plates can thus be prepared and placed in a rack. When it is desired to put any cycle into effect, it is only necessary to drop the proper program plate onto the control board and move a master lever, which then brings each individual circuit intensity lever to position corresponding to the position of the previously adjusted stops on the program plate, whereupon the cycle goes into effect immediately. It is thus possible to prepare various cycles in advance, with each program plate, if desired, corresponding with a certain concert orchestra selection, and to play the light with the symphony. Attempts have been made actually to record "light symphonies" on phonograph records and to reproduce them by mechanisms similar to sound reproduction systems used in motion picture theaters. The great difficulty is to make a change in one of these records to correct a disharmonious combination of colors. The only satisfactory system thus far discovered is the "trial and error" system with the simplest possible mechanism for determining satisfactory combinations.



Specially Designed Lighting Units

WHEN John D. Rockefeller, Jr., backs an historical project, and the city of New York erects a $7,000,000 court house, something interesting in the way of outdoor lighting can be one of the results. It has been in the case of the two units shown here. The one at the left is typical of the 73 units in 4 designs that have been installed in the restored city of Williamsburgh, 18th century capital of Virginia. Standards carrying the oil lamps of colonial times were of wood; but these manufactured by the Westinghouse Electric Manufacturing Co. are of cast iron. They were designed by Perry, Shaw & Hepburn, who have not overlooked the ladder rest or the ventilator on the top of the lantern. These four-sided lanterns have sheet-copper frames, and the glass panels are equipped with blow holes and ripples characteristic of hand-worked glass, and there is a lamp chimney. But they contain 2,500- and 1,000-lumen mazdas.

The street lamp at the right is outside the recently completed Bronx County Court House in New York City. It is one of sixteen which Joseph H. Freedlander designed to harmonize in both style and scale with the building. The standards are bronze, 24 feet high, and are on granite bases. There are two 500-watt lamps equipped with General Electric refractors in each lantern, one at the top and the other at the bottom.



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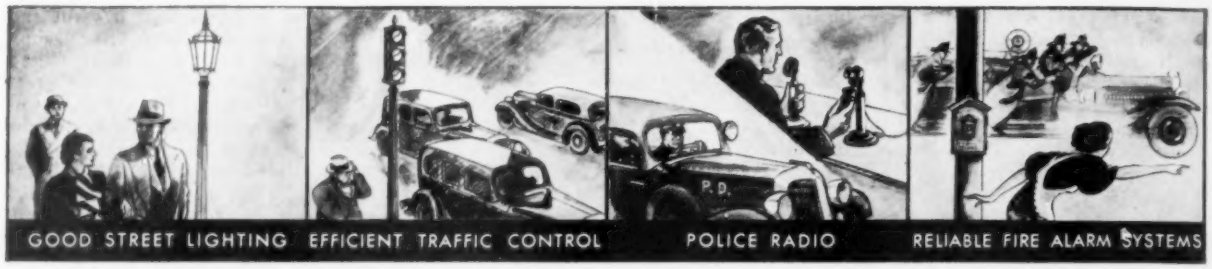
or This?



You pay for Public Safety

whether you get it or not!

Add these up. America's annual cost of traffic accidents, $2,500,000,000! Burglary and theft, $250,000,000! Tremendous fire losses! . . . Against these balance the relatively insignificant sums now spent for *Public Safety* equipment . . . better street lighting, police radio, efficient traffic control, efficient fire alarm systems. Does it pay? Let's see. Better street lighting alone could *save* an estimated $275,000,000 — many times the cost of the equipment . . . These facts apply, on a smaller scale, to your own community. Worth investigating? Graybar can help you with unbiased advice . . . dependable equipment. Write us — or call your nearby Graybar house for information on all types of Public Safety electrical equipment.

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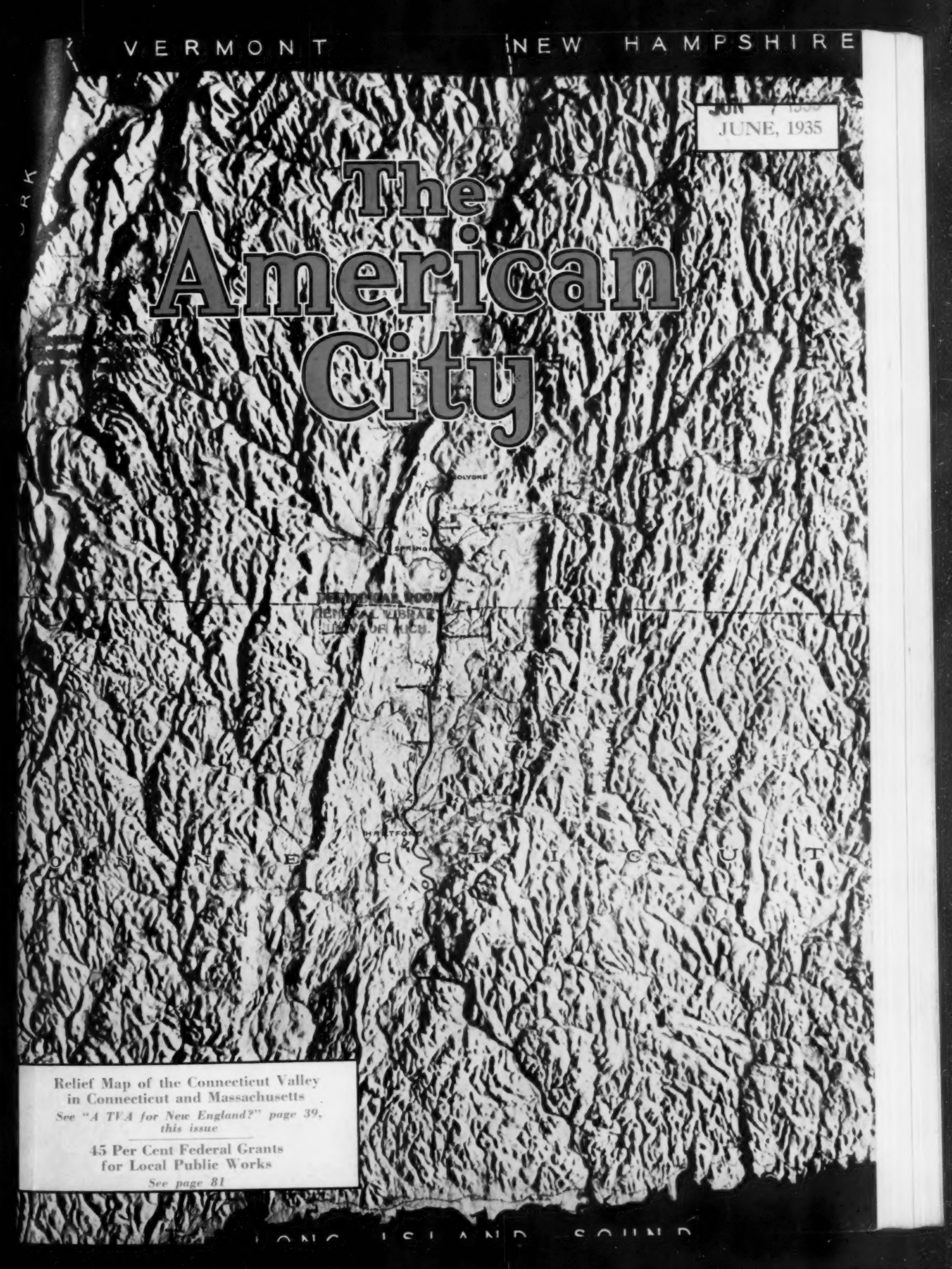

Relief Map of the Connecticut Valley in Connecticut and Massachusetts

See "A TVA for New England?" page 39, this issue

45 Per Cent Federal Grants for Local Public Works

See page 81